VS 680 VPT

VIDEO CASSETTE RECORDER

English

GRUNDIG

Contents

Operation of the Video recorder is possible with the remote control as well as with the control buttons on the recorder.

If certain functions can only be controlled either with buttons on the remote control or with buttons on the recorder, this will be indicated in the chapter concerned.

In each case, an illustration will show you which buttons are required for the respective functions.

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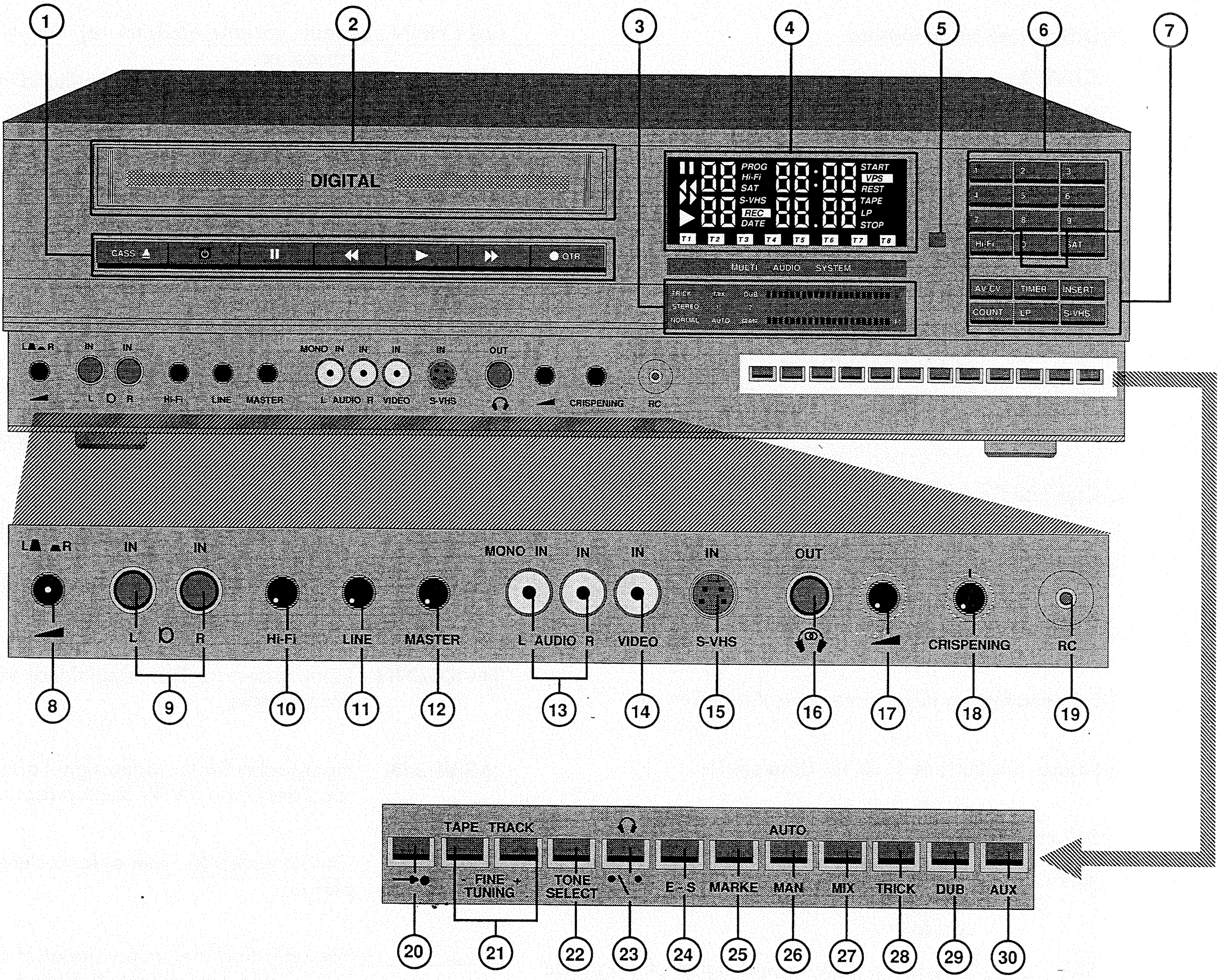
Please fold out page 3 when reading the instruction booklet

Your Recorder at a Glance



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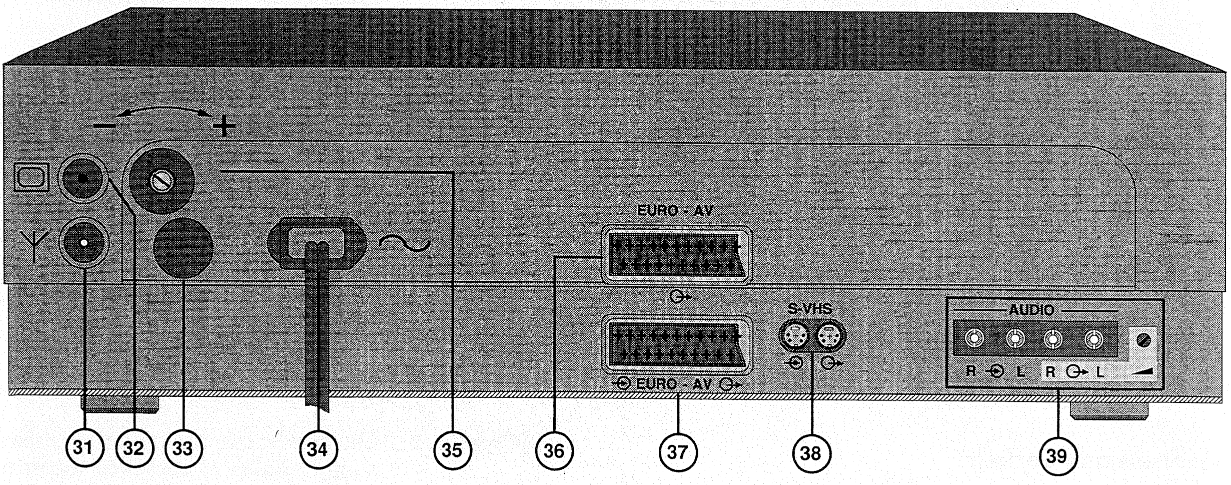

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EURO - AV
S-VHS
AUDIO
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Your Recorder at a Glance

①**Drive Mechanism Buttons**

CASS/⏏ — Cassette ejection

⏻ — Terminates all functions (Stop/Standby)

❚❚ — Pause in recording mode,
still picture (freeze-frame) on playback.

◀◀ — Fast rewind,
reverse picture search on playback.

▶ — Starts playback.

▶▶ — Fast forward wind,
forward picture search on playback.

● OTR — Pressing this button a longer time starts recording.

②**Cassette Compartment**

③**Display** for sound selection and recording level control.

④**Display** for general data.

⑤**Infrared Eye** for the remote control receiver.

⑥**Numbered Buttons 1…0**, for data entries.

⑦**Selection Buttons**

Hi-Fi — Selects the sound signal on sockets ㊴ **AUDIO R⊖L** (eg: on a HiFi unit) for recording.

SAT — Selects the video/sound signal of a satellite receiver on socket ㊲ **EURO-AV** for recording.

AV — Selects the video/sound signal of another recorder on socket ㊲ **EURO-AV** for recording.

CV — Selects the video/sound signal of a camera recorder on the sockets ⑬ **AUDIO IN** and ⑭ **VIDEO IN** for recording.

TIMER — For selecting the programmable TIMER memory positions.

INSERT — For preselecting the "Insert Recording" mode.

COUNT — For switching over between hours/minutes indication and 6-digit tape counter indication.

LP — For switching over between longplay operation (double cassette playing time) and normal play operation.

S-VHS — For switching over between S-VHS and VHS operation.

Controls and Sockets

⑧**◢ L R** — For adjusting the sound signal of two microphones (connected to the input sockets ⑨).
Press button again to release it.
R ▄ = right-hand input,
L █, pull button = left-hand input.

⑨**LЮR IN** — Input sockets (6.3 mm ø) for two microphones.
L = left-hand input, **R** = right-hand input.

⑩**Hi-Fi** — For adjusting the sound level of the hifi sound track.
Press button again to release it.

⑪**LINE** — For adjusting the sound level on the input sockets ㊴ **AUDIO R⊖L**.
Press button again to release it.

⑫**MASTER** — For adjusting all sound levels on the sockets ⑨ **LЮR** and ㊴ **AUDIO R⊖L**, and the sound level of the existing hifi sound track.
Press button again to release it.

⑬**AUDIO IN** — Input sockets for the sound signal of a camera recorder.
L = left-hand input (Mono), **R** = right-hand input.

⑭**VIDEO IN** — Input socket for the video signal of a camera recorder.

⑮**S-VHS IN** — Input socket for the video signal of an S-VHS recorder or an S-VHS camera recorder.

⑯**OUT** — Output socket (6.3 mm ø) for a stereo headphone.

⑰**◢** — For adjusting the sound signal of a stereo headphone connected to socket ⑯.
Press button again to release it.

⑱**Crispening** — For adjusting the picture sharpness on playback.
Press button again to release it.

⑲**RC** — Socket (3.5 mm ø) for the START/STOP signal for the GRUNDIG camera recorders (S-VS 180, S-VS-C 80, VS 170, VS-C 60 or VS-C 40).

Function Selection Buttons

⑳**→•** — For activating station tuning and starting the station search function.

㉑**Tape Track** — On playback: for optimizing the picture/sound quality of cassettes recorded on another machine.

Fine Tuning — On programming: For stepping through the station memory positions (press button ㉓ beforehand).
For fine tuning the adjusted stations.

Your Recorder at a Glance

㉒ **Tone Select** _ On recording: For selecting between sound channel 1 and sound channel 2 in the case of 2-channel-sound broadcasts.
On playback: For selecting between sound track 1 and sound track 2, mono or hifi track.

㉓ Ω ·\· _____ For selecting the sound track and for checking the sound via a headphone connected to socket ⑯.
When recording 2-channel-sound broadcasts: For selecting sound channel 1 or 2.
On recording and playback of stereo broadcasts: For selecting sound channel 1 or 2, or sound channels 1 and 2.

㉔ **E-S** _____ For starting the Edit-Search function.
The recorder switches to rewind, searches the next electronic mark, then switches to plackback/pause (still picture).

㉕ **MARKE** ___ Permits to mark certain scenes during recording.

㉖ **AUTO MAN** _ Permits to select between manual and automatic sound level control during recording.

㉗ **MIX** _____ For selecting the sound function MIX.

㉘ **TRICK** ___ Activates Trick-dubbing.

㉙ **DUB** _____ Activates the dubbing function.

㉚ **AUX** _____ During station tuning: For switching over between special and normal channels.

Controls and Sockets on the Back of the Recorder

㉛ Y _______ Connect the external aerial to this socket.

㉜ □ _______ Connect this socket via the enclosed aerial lead with the aerial socket of your TV receiver.

㉝ _________ **Universal Socket**
For service purposes and for connecting the control lead of an appropriate Satellite Receiver.

㉞ _________ **Mains Lead** (180–240 V AC, ± 10 %)

㉟ – ↷ + ___ **Channel Selector**
The output channel of the recorder lies between the channels 30 and 40.
The channel selector permits to change the channel setting.

㊱ **EURO-AV** _ **Output Socket** for the video/sound signal to
⊙→
- TV receivers,
- other video recorders.

㊲ **EURO-AV** _ **Input and Output Socket** for the video signal from/to
→⊙ ⊙→
- TV receivers,
- other video recorders,
- satellite receivers,
- video cameras.

㊳ **S-VHS** ___ **Input and Output Socket** for the video signal from/to
→⊙ ⊙→
- S-VHS video recorders, and
- for connection to the S-VHS socket of an appropriate TV receiver.

㊴ **AUDIO** ___ **R →⊙ L** **Input Sockets** for the sound signal
- from stereo equipment,
- from other stereo video recorders,
- from other S-VHS recorders.

R ⊙→ L **Output Sockets** for the sound signal
- to a stereo TV receiver,
- to stereo equipment,
- to stereo recorders,
- to other S-VHS recorders.

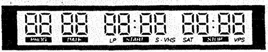
◢ Control for adjusting the sound level on the **output sockets R ⊙→ L.**

The Remote Control at a Glance

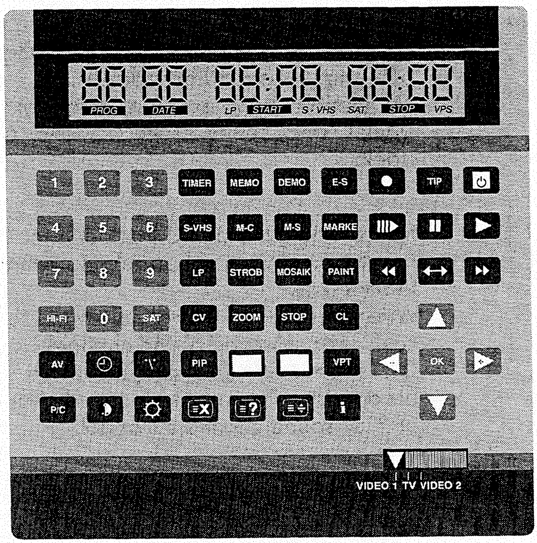
Level 1

This control level is required for all recording and playback functions, text programming, picture-in-picture functions, and for Teletext (Videotext) operation.

The remote control switch is set **VIDEO 1**.


Remote control display.

1 ... 0	Numbered buttons for various entries.
Hi-Fi **SAT** **CV** **AV**	For selecting the different programme sources for recording.
⊙	Confirms the time and date and shows the date in the display of the recorder.
•\\•	Selects sound channel 1 or 2, normal or stereo mode.
P/C	On station tuning: activates the fine tuning function.
◑	Switches on and off the colour noise suppression.
☼ ⊠	No function on recorder operation.
TIMER	Activates TIMER programming in the remote control display. Confirms TIMER data.
MEMO	Stores a single picture (frame).
DEMO	Recalls the memorized single picture and displays it on the TV screen.
E-S	Switches to rewind, searches the next electronic mark, then switches to playback/pause (still picture).
S-VHS	Switches from S-VHS operation back to normal operation and vice versa.
M-C	Selects the "Multi-Channel" function.
M-S	Selects the "Multi-Scene" function.
MARKE	Permits marking of desired scenes during recording.
LP	Switches to longplay operation and back to normal operation.
STROB **PAINT** **MOSAIK** **ZOOM**	For selecting various digital picture effects.



CL	Clears data and terminates functions.
PIP	Inserts a small picture into the large picture.
☐ **(yellow)**	For selecting topics during Teletext operation.
☐ **(green)**	For selecting sub-topics during Teletext operation.
TIP	During recording/pause: Inserts "Title Pages" and "Text/Graphics Boxes" on the picture screen.
VPT	For programming recordings in the text programming mode: Shows the Teletext page stored in the TV Stations Table on the TV screen.

Drive Mechanism Buttons

●	Pressing a longer time starts recording.
⏻	Terminates all functions.
III▶	Switches to slow motion.
II	Pause during recording, still picture during playback.
▶	Starts playback.
▶▷	Forward picture search on playback, fast forward wind on Stop (button ⏻).
↔	Starts Go-To function.
◁◀	Reverse picture search on playback, fast rewind on Stop (button ⏻).

The Remote Control at a Glance

◀ ▲ ▶ ▼ — Cursor buttons for moving the cursor and for selecting various functions.
For selecting station positions (on Stop).
For adjusting the track position (on playback).
For fine tuning the selected stations.

OK — Confirms data.

i — Selects the Info-Page and switches back to the TV picture.

STOP — Stops sub-pages on Teletext operation.
"Freezes" pictures (on playback and EE-operation).
Switches off the remote control display.

≡÷ — Enlarges the character height on Teletext operation.

≡? — Reveals "hidden" information on Teletext operation (eg: quiz answers or moves when playing chess).

VIDEO1 TV VIDEO2 — Switches the remote control back for TV operation or for controlling a second video recorder.

Level 2 (remote control opened up)

This control level is required for creating title pages and text/graphics boxes.

BLACK, RED
GREEN, YELLOW,
BLUE, MAGENTA,
CYAN, WHITE } Colour selection buttons for the colour of the text, the lines, and the page background.

FLASH — Makes text passages and characters flash.

STEADY — Clears the FLASH function.

START BOX — Starts the function "Creating Text/Graphics Boxes".

END BOX — Terminates the function "Creating Text/Graphics Boxes".

NORMAL HEIGHT — Terminates the function "DOUBLE HEIGHT".

DOUBLE HEIGHT — Doubles the height of a text or the characters of a line.

CON GRAPH — Terminates the function "SEPAR GRAPH".

SEPAR GRAPH — Reduces graphics characters to dot graphics.

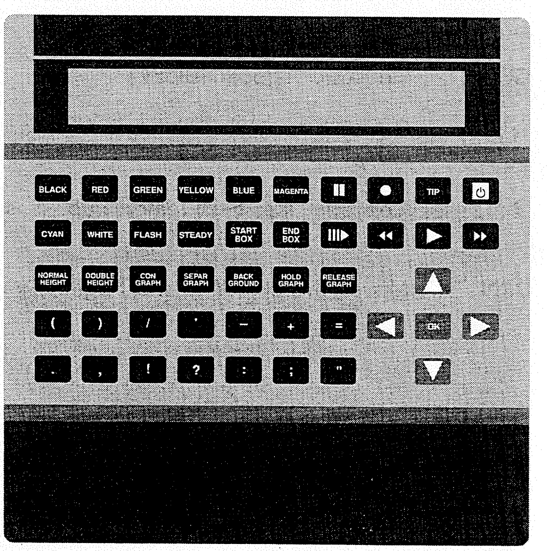
BACK GROUND — Displays a line or a page in the selected colour.

HOLD GRAPH — Repeats the last entered graphics character.

RELEASE GRAPH — Releases the function "HOLD GRAPH".

( ) ... ; " — Special characters for text entry and various control functions.

◀ ▲ ▶ ▼ — Move the cursor.



OK — Stores title pages and text/graphics boxes.

II ● ⏻
III▶ ▶
◀◀ ▶▶ } — Drive mechanism buttons (see level 1).

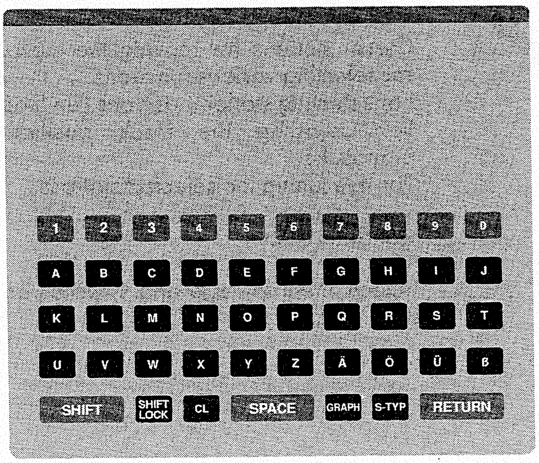
TIP — Reads already stored title pages and text/graphics boxes from the memory into the editing page or into the recording.

The remote Control at a Glance

Level 3 (remote control opened up)

This control level will be required for creating title pages and text/graphics boxes and for making entries into the "Stations Table".

1...0	Numbered buttons for selecting info pages. For making entries in the title pages and text/graphics boxes. For making entries in the "Stations Table".
A,B,C,etc.	Letter buttons for making entries into the title pages and text/graphics boxes. For entering station abbreviations into the "Stations Table".
SHIFT	The following letter will be an upper case letter.
SHIFT LOCK	All following letters will be upper case letters.
CL	Clears letters, figures and special characters.
SPACE	Causes a "space" (blank).
GRAPH	Switches over the keyboard for graphics entry.
S-TYP	Converts the next entry into a special character.
RETURN	Moves the cursor to the beginning of the next line.



What You should Know about Your Video Recorder

The Super-VHS-System

Super-VHS (S-VHS) is a further development of the VHS-Video world standard.
The advantages of this system are the better picture brilliance and sharpness when playing back video recordings in the standard and longplay modes.

In connection with an S-VHS TV receiver, you will get maximum quality of picture and sound reproduction.

The S-VHS and VHS video cassettes

Already existing VHS cassettes can be used without problems with this recorder.
S-VHS cassettes can be recorded according to the S-VHS format or the VHS format.
When the cassettes are played back, the video recorder automatically recognizes the correct format.
S-VHS recordings **cannot be played back** on a **VHS** machine.

Longplay or standard operation?

By simply pressing a button before starting recording, the playing time of the cassette can be doubled.
When playing back the recording, the recorder automatically selects the correct operating mode.

The dialogue remote control handset ...

... represents the central control unit for this video recorder.

From the comfort of your armchair you will be able to remotely control most functions of the video recorder.

TIMER (preselection) functions

These are used to programme all TIMER data into the remote control (preselection) memory and to transmit them to the recorder by simply pressing a button.

GRUNDIG Text Programming with VPT

Programming with the remote control handset, checking on the TV set, ...
... ie: call up data from the Teletext pages provided by the TV stations and confirm them with the remote control. The selected data will be shown on the TV receiver.
Information lines will guide you to the next programming step and the entry possibilities resulting from that.
The dialogue is possible in several languages.

Remote control of the TV receiver

is possible for many functions of your GRUNDIG TV receiver.

The digital picture functions of this recorder

9-fold Multi-Channel function

It is possible to show **9 different programmes** with the associated station abbreviations one after the other on the TV screen.

Multi-Scenes function

It is possible to show **9 time-offset small pictures** simultaneously on the TV screen. 8 of these pictures are shown as still pictures, whereas the centre picture shows the "running" programme.

Picture-in-Picture

A small picture which can be shown either "animated" or as a freeze-frame can be inserted into the "normal" picture.
It is possible to position the small picture as desired on the TV screen.

Storing a single picture into memory (Memo/ Demo)

It is possible to store a picture of a TV programme or of a video playback into the memory and to recall it later as desired.

Magnifying (lens) and Zoom effect

You can select a certain picture detail with the "lens" and then magnify it by up to 16 times ("Zooming").

Mosaic effect

It is possible to "decompose" the picture into mosaic-like raster elements.

Paint effect

You can "colour" and "shade" (grade) the TV picture according to your taste.

Stroboscopic effect

When using this effect, the picture movements will appear "jerkily" and disjointed ("broken").

Create your own title pages

With the remote control and this recorder, you can create your own "title pages".
You may then insert these title pages, for example when you are editing your video recordings made with a camera recorder during your holidays.

Create your own text/graphics boxes

You may insert text/graphics boxes into already existing recordings **at a later date.**
To do that, the existing recordings must be copied from a second recorder to this machine, and the text/graphics boxes will be created with the help of the remote control on this recorder.

The GRUNDIG Multi-Audio-System

Recording and playing back in hifi quality

Your recorder contains two different sound recording and playback systems:

- The hifi track (helical scan system)
  for stereo and two-channel sound recordings.
  With this recording system, the recorder can also be used as hifi tape recorder for recording and playback in top quality.
- The mono track (longitudinal track system)
  for sound playback on a standard VHS-recorder;
  for adding sound at a later date,
  for trick/mix recordings.

Of course, this recorder operates with Teletext (Videotext)

The built-in teletext decoder makes each TV set suitable for Teletext operation. Teletext information can simply be called up by means of the remote control.

What You should Know about Your Video Recorder

Is your local area connected to a cable TV network or will it be connected in the near future?

If this should be the case, you will have no problems, as your recorder is suited for cable TV reception, ie: it can receive and record all TV broadcasts which are applied directly or via a Satellite to the cable TV system.

The automatic programme finder (APF-System)

This facility enables you to find precisely and quickly the beginning of any recording made by your own.
In addition, this system allows you to electronically mark any desired scene during recording.

The ATTS System
(ATTS = Auto-Tape-Time-Select)

automatically recognizes the **total playing time** as well as the already **elapsed playing time** of standard hours cassettes and shows these times in the display.

This recorder can be programmed for:

- eight different TV broadcasts over a 12 month period,
- daily or weekly recordings at the same time,
- with or without VPS control,
- in standard or longplay mode.

Use the special functions of the recorder!

– Continuous playback, eg: commercial spots.
– Continuous recording, eg: in surveillance systems.

Security lock

With the electronic lock you can stop other people using your recorder without permission.

The Video Programme System, called VPS

When making **TIMER recordings**, control through the VPS system always ensures that the respective programme is completely recorded.

For this purpose, the TV stations are emitting an additional signal for each programme which **marks the beginning and the duration of the** programmes.

For this reason, it is important that the **switch-on times** programmed on the recorder are **exactly the same** as those indicated in the programme guides.

If **different VPS times** are stated in the programme announcement, for example in the case of programme shifts, insertion of programmes, etc., enter these VPS times instead of the normal starting times.

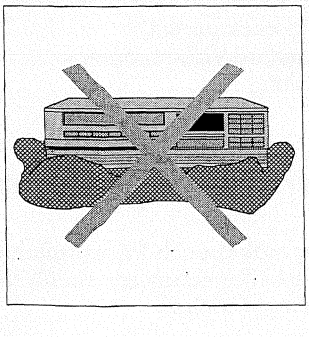
If now the beginning of the programme is shifted with respect to the starting time indicated in the programme guide, the recorder will recognize this and will switch on at the **actual start** and off at the **actual end** of the programme.

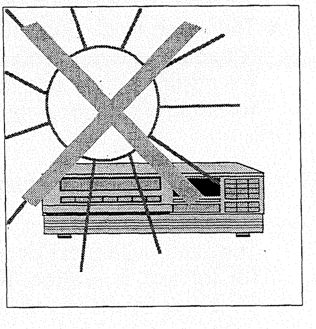
By means of this system, wrong recordings in the case of programme shifts will no longer be possible.

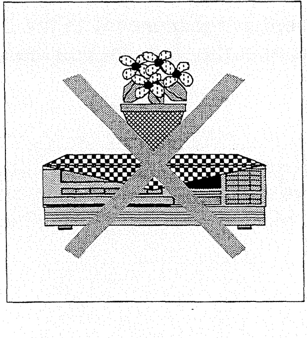
Installation

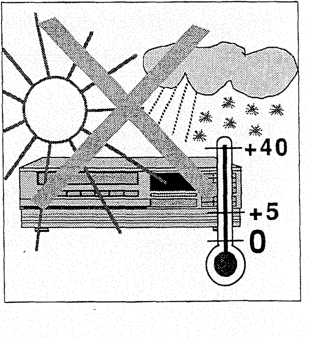
Positioning

- Place the recorder onto a plain and hard surface.
- Do not place the recorder in the immediate vicinity of a source of heat or in direct sunlight.
- Keep free the ventilation holes in the base of the recorder and the ventilation slots in the upper part of the cabinet.
- Do not expose the recorder and the cassettes to moisture. Moisture can also be produced in the case of sharp changes in temperature, eg: when the recorder is taken from a cold to a warm area.
  In such a case, switch on the recorder and allow it to stand for at least two hours without a cassette inserted.

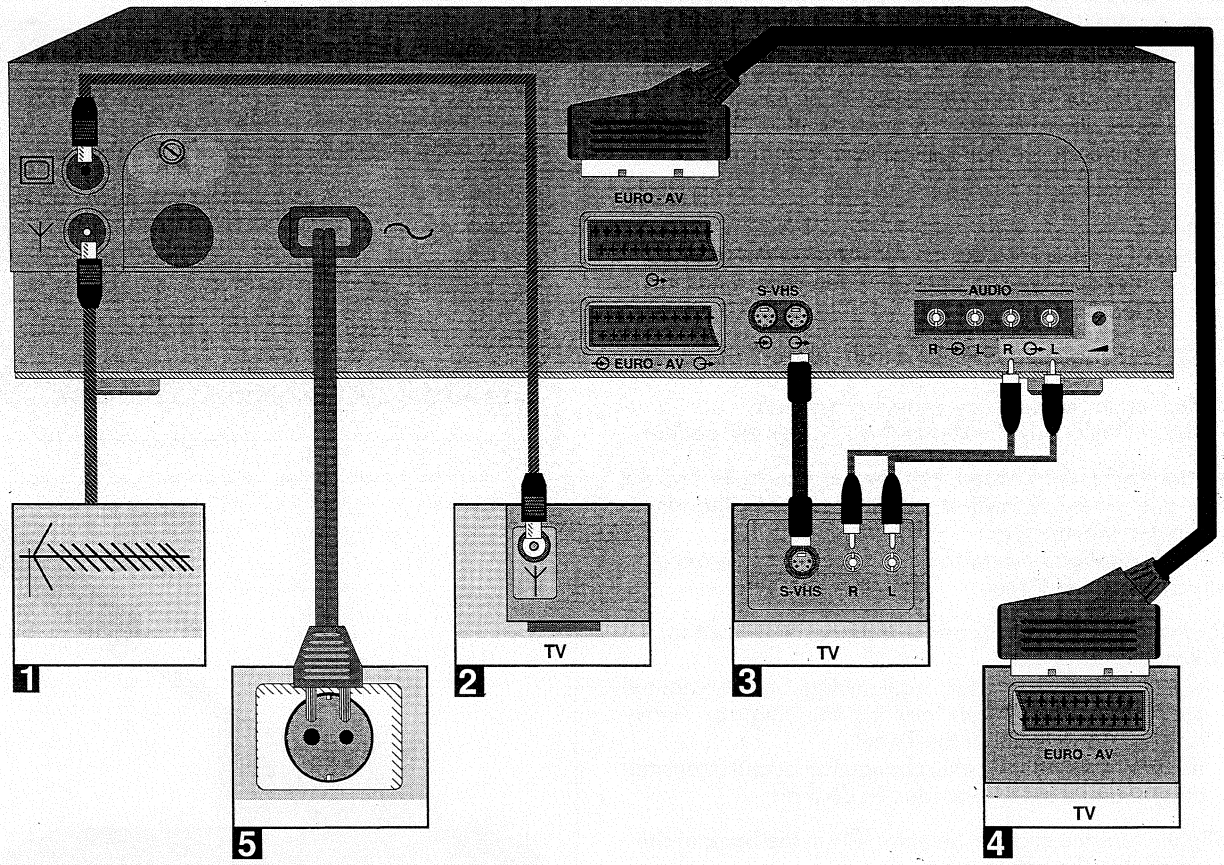








Connection



1 Aerial connection

- Pull the plug of the aerial lead out of the aerial socket of your TV set and plug it into the socket Y of the recorder.

2 Connecting the recorder and the TV set ...
... with an aerial lead

- With the supplied aerial lead, connect the socket ▭ of the recorder with the aerial socket of the TV set.

3 Connecting the recorder and an appropriate TV set ...
... with an S-VHS lead

S-VHS recordings with optimum quality can be played back on the TV set only via this lead.

- With the supplied S-VHS lead, connect the socket **S-VHS** ⊖ of the recorder with the respective S-VHS socket of your TV receiver.
- For the audio signal, connect the sockets **AUDIO R ⊕ L** via a commercially available lead (with Cinch plug) with the respective sound input sockets of the TV receiver.

⚠ If the sockets **AUDIO R⊕ L** are required for the connection to a hifi unit, the sockets **EURO-AV** ⊕ or ⊕ **EURO-AV** ⊖ can be used as sound outputs. Special adapter leads can be obtained from your dealer.

4 Connecting the recorder and the TV receiver ...
... with an Audio-Video (AV) cable.

The advantage of this connection is a better quality of picture and sound during playback.

Stereo reproduction via a stereo TV receiver is only possible with this AV connection.

- If your TV receiver has a **Euro-AV** socket, connect this socket via a commercially available Euro-AV cable with the output socket **Euro-AV-**⊖ of the recorder.
- If your TV receiver is provided with a **DIN-AV** socket, make the connection with a commercially available DIN-AV connecting cable.

5 Mains connection (180 – 240 V, ± 10 %)

- Insert the plug of the mains lead into the wall socket.
  - The clock time appears in the display of the recorder.

⚠ To disconnect the recorder completely from the mains pull mains plug.

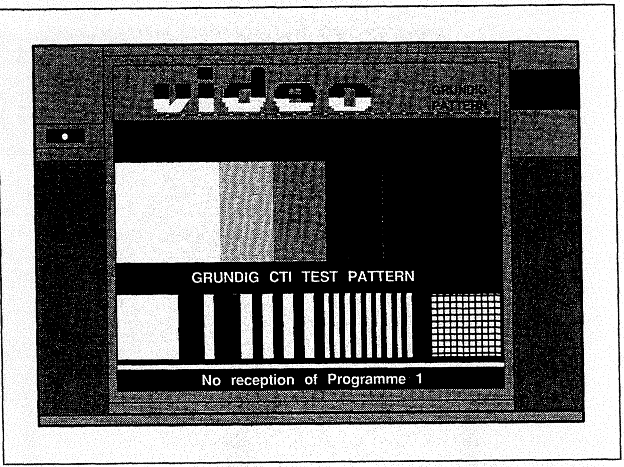
⚠ The mains lead must be replaced by a specialized dealer only by an original replacement cable according to the VDE/IEC regulations.

Further connection possibilities and operation ...

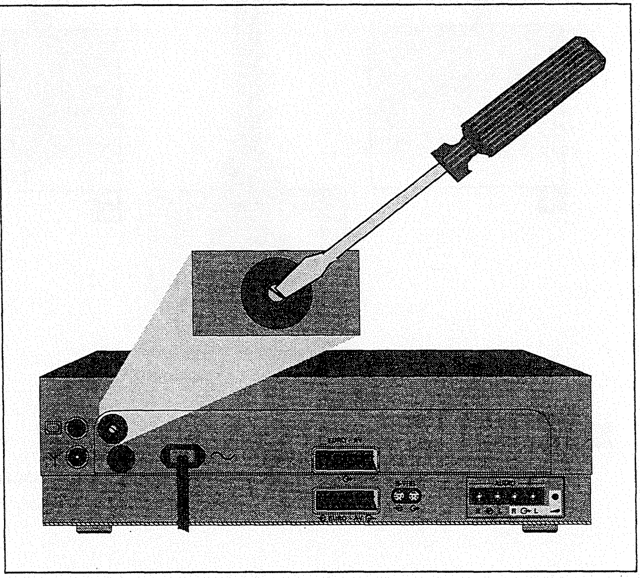
- with a hifi system see pages 46 to 49;
- with a Satellite Receiver see page 50;
- with a second recorder see page 50;
- with a second S-VHS recorder see page 51;
- with a camera recorder see page 52.

Tuning the TV Set to the Recorder

Your TV set receives the programmes of various stations on certain channels. Your recorder is also transmitting on such a channel (between channels 30 and 40 in the UHF (VHF) band) to which your TV receiver now must be tuned.
For this purpose, the recorder is provided with a "Transmitter" which delivers a colour test pattern. For tuning, proceed as follows:



1. Switch on TV set and select the **AV programme position** which is intended for playback of video recordings via the **aerial lead**.
2. Unplug the aerial lead from the aerial socket Y of the recorder.
3. Switch on the recorder by pressing button ⏏.
   - The recorder now "transmits" the colour test pattern.
4. **In the VHF (UHF) range, between channels 30 and 40,** tune the TV set to the test pattern and store the tuning point into the memory.
   For information on how to do that, see the operating instructions of the TV set.
5. Re-insert the plug of the aerial lead into the aerial socket Y of the recorder.
   - If there is a TV station transmitting on the channel tuned to, you will get "moiré patterning" or "wavy lines" on the screen of the TV set.
     If this should be the case, change the output (transmitting) channel of the recorder. To do that:
6. Slightly turn the channel selector ⊘ (in the back of the recorder) to the left or right.
7. Again search the test pattern on the TV set and store it into memory.



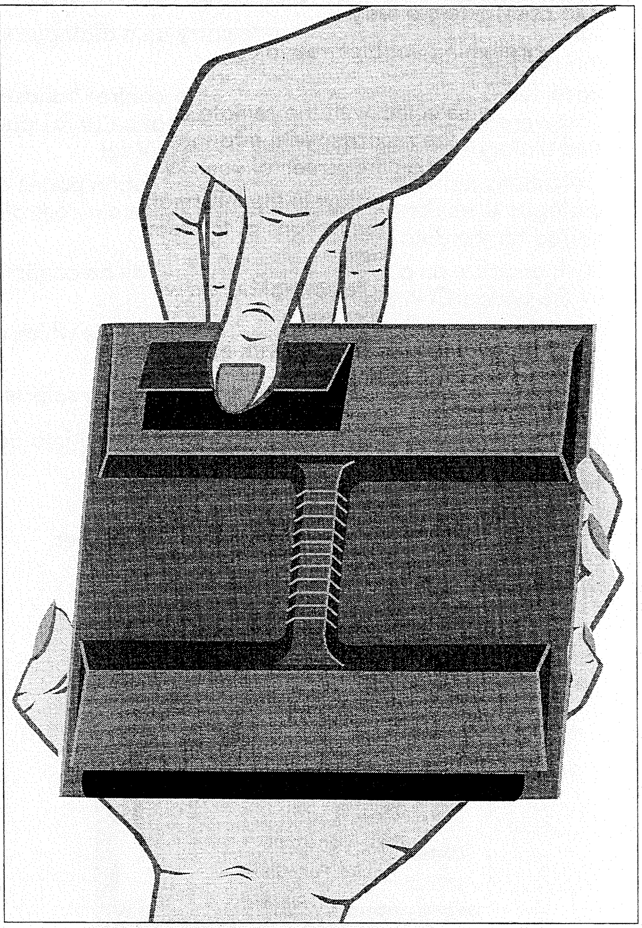
Inserting Batteries into the Remote Control Handset

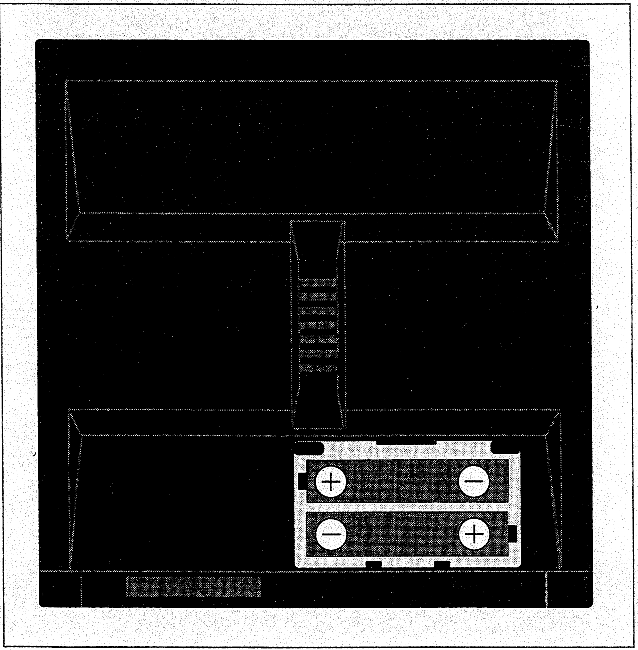
To remove the battery compartment cover, press the catch and remove the cover.
When inserting the batteries (2x1.5 V, type LR6), observe the correct polarity as shown on the bottom of the battery compartment.

Should your recorder no longer correctly respond to the signals from the remote control handset, the batteries are probably exhausted.

Remove exhausted batteries immediately.
No responsibility is taken for damage caused by leaking batteries.

⚠ Exhausted batteries must be handed over to a special refuse collecting plant (environmental protection).



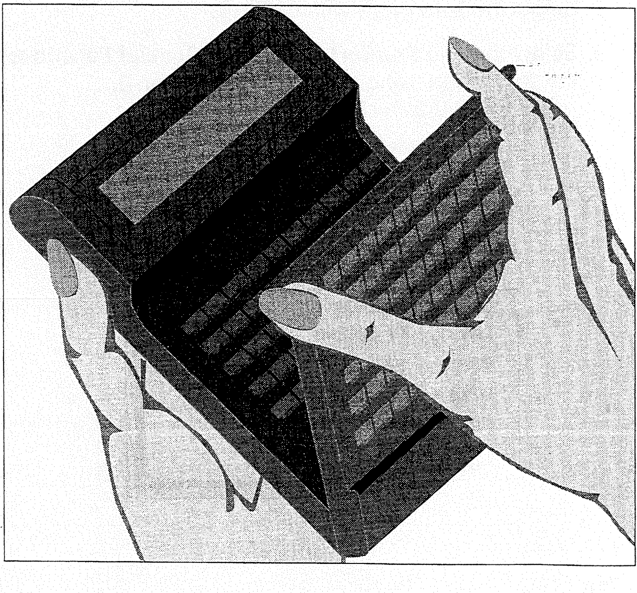


Opening Up the Remote Control Handset

The remote control buttons are located on three levels on the handset.

If you need the buttons of the levels two and three, the remote control handset must be opened up (see figure).

The **first** level serves for the essential control functions, whereas the levels **two** and **three** are provided for creating title pages and text/graphics boxes, and for entries when programming the recorder.



GRUNDIG Text Programming ...

... the comfortable way to operate your recorder.

Text programming enables you to carry on a dialogue with this recorder.

Each function selected with the remote control handset is "answered" by the recorder with information (info) pages and dialogue lines on the screen of your TV set.

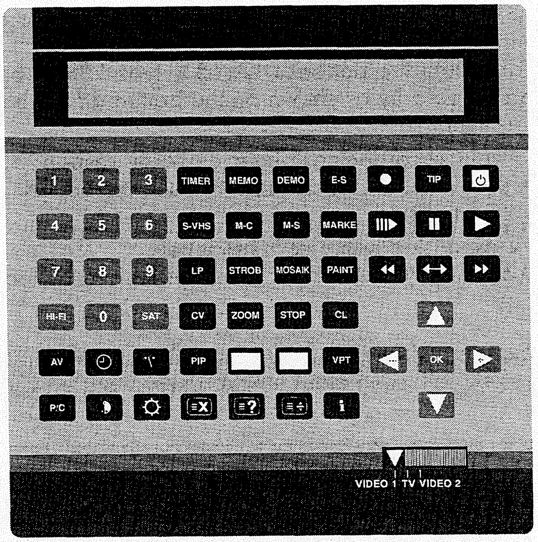
Indications marked in **yellow** in the information pages and dialogue lines denote the buttons of the remote control required for the data entries.

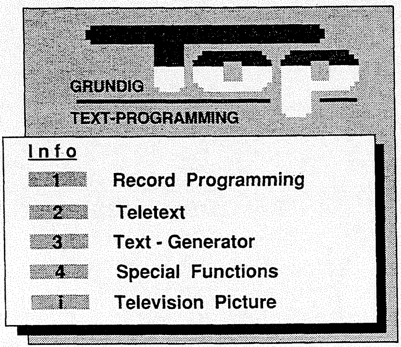
Each pressure on a remote control button will be confirmed by the symbol ◘ in the display.

You will be guided step by step with instructions which are simple and easy to understand.

The **Info** table shows you which functions can be selected.

1. Push the switch of the remote control handset into position **VIDEO 1**.
2. Select the information table **Info** with button **i**.
   – The table appears on the screen of your TV set.





GRUNDIG
TEXT-PROGRAMMING

Info

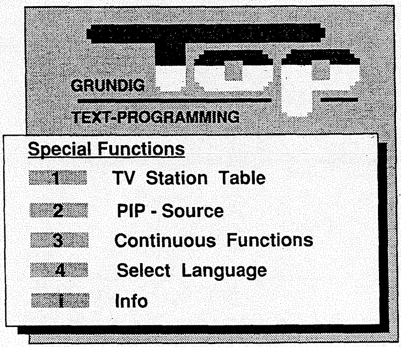
1 Record Programming
2 Teletext
3 Text - Generator
4 Special Functions
i Television Picture

– **Info** in the **display of the recorder** signals that the unit is ready for text programming.
Now use the numbered buttons **1** ... **4** to select the desired functions in the information table **Info**.
For further information about the individual control functions see the respective chapters in the operating instructions.

Selecting the Language

For the dialogue (communication) with your recorder, you can select between several languages.
The unit is preset to the **German** language.
If you wish to carry on the dialogue in another language, proceed as follows:

1. Select the **Info** page with button **i**.
2. Select the line **Sonderfunktionen** (**Special Functions**) in the **Info** page using the numbered button **4**.
   – The table **Sonderfunktionen** appears.

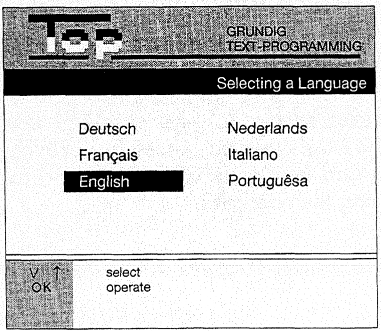


GRUNDIG
TEXT-PROGRAMMING

Special Functions

1 TV Station Table
2 PIP - Source
3 Continuous Functions
4 Select Language
i Info

3. Select the line **Sprachwahl** (**Selecting a Language**) with the numbered button **4**.
   – The table **Sprachwahl** appears.
4. Select the desired language with button ▲ or ▼.
   – The selected language will be marked with blue background.



GRUNDIG
TEXT-PROGRAMMING

Selecting a Language

Deutsch
Français
English

Nederlands
Italiano
Portuguêsa

V ↑ select
OK operate

5. Return to the **Info** table using button **i**.
   – From now on, all information pages and dialogue lines will appear in the selected language.
6. Return to the television picture by pressing button **i once again**.

Tuning the Recorder to TV Stations

So that your recorder can record TV broadcasts, it must be tuned to the local TV stations or to the special channels of the regional cable TV network.

There are three possibilities for tuning:

1. With the remote control and the "TV Station Table".
2. With the buttons and the display on the recorder by entering the channel number.
3. With the buttons and the display on the recorder using the station search system.

Information about the channel numbers/special channel numbers can be obtained from your **dealer, the after-sales service**, or the **post office**.

⚠ If you do not know the channel numbers, choose the third possibility using the station search system.

Preparations:

1. Switch on TV set.
2. Select the **programme position** for **video playback** on the TV receiver.
   - The tuning procedure can be checked on the TV screen.
3. Slide the switch on the remote control into position **VIDEO 1**.

Note on record programming with the Videotext (Teletext) pages of the broadcasting stations.

For "record programming" with the text programming system you select no longer the programmes from the TV guides, but from the programme summary which certain broadcasting stations offer on Videotext pages.

All you need to do is to enter the number of these videotext pages and the channel number of the desired station in the TV station table.

Certain programmes are broadcasted with subtitles for those which are hard of hearing. The page numbers for the subtitles are given in the announcements before the respective broadcasts and in the Videotext pages "Sub-titles Preview".

You need only enter the number of the desired subtitle page in the TV station table.

For this purpose, the programme positions 1 to 9 are at your disposal.

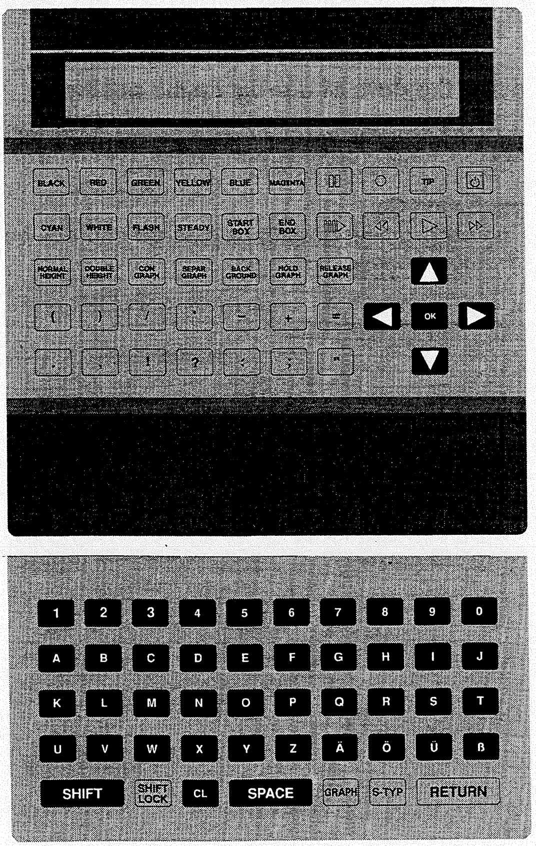
For a detailed explanation see next page, points **1.7** and **1.8**.

When performing record programming, these videotext pages will automatically be called up.

Possibility 1:

Tuning to TV stations with the remote control and the "TV Station Table"

The following buttons will be required



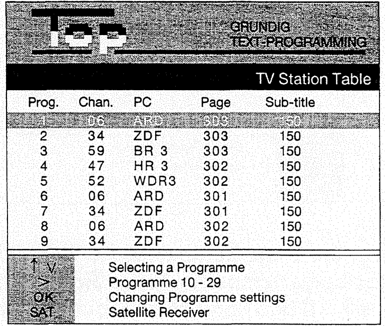
1. Example with programme (station) position 1:

1.1 Select the **Info** page with button **i**.

⚠ Now open up the remote control handset and use the levels 2 and 3 for the further entries.

1.2 Select the line **Special Functions** in the **Info** page using the numbered button **4**.

1.3 Select the line **TV Station Table** in the page using the numbered button **1**.
   - The page **TV Station Table** appears, programme position 1 is activated (marked by a blue line).



GRUNDIG TEXT-PROGRAMMING

TV Station Table

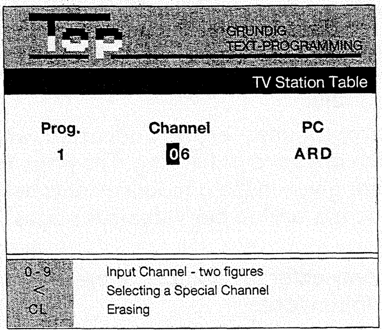
Prog.	Chan.	PC	Page	Sub-title
1	06	ARD	305	150
2	34	ZDF	303	150
3	59	BR 3	303	150
4	47	HR 3	302	150
5	52	WDR3	302	150
6	06	ARD	301	150
7	34	ZDF	301	150
8	06	ARD	302	150
9	34	ZDF	302	150

↑ V Selecting a Programme
> Programme 10 - 29
OK Changing Programme settings
SAT Satellite Receiver

- The first programme positions are occupied by stations.

Tuning the Recorder to TV Stations

1.4 To change the programme allocation of the first programme position, press the **OK** button.
- The data of the first programme position appear enlarged on the picture screen. The first digit of the channel number is marked by a rectangle (cursor).



GRUNDIG TEXT-PROGRAMMING

TV Station Table

Prog.	Channel	PC
1	06	ARD

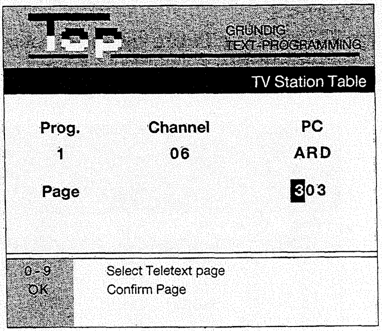
0 - 9 Input Channel - two figures
< Selecting a Special Channel
CL Erasing

> ⚠ If there should corrections be required during the entries of points **1.5** to **1.8**, the cursor can be moved to the required position with the buttons ▲, ▼, ◀ and ▶.

1.5 Enter the channel number as two figures using the numbered buttons **1** ... **0**. In the case of special channels, first press button ◀: an **S** will appear in front of the channel number.
- The cursor jumps to the first position of the station abbreviation (only on programme positions 1 to 19).

1.6 Enter the first position of the station abbreviation with the **letter** buttons **A**, **B**, **C**, etc. (max. 4 places).
- To enter upper case letters, first press the **SHIFT** button.
- To enter a blank, press button **SPACE**.
- The cursor jumps to the second position.

Repeat the entry for the remaining 3 positions.
- The cursor jumps to the first position of the page number (only on the programme positions 1 to 9, see note on preceding page).



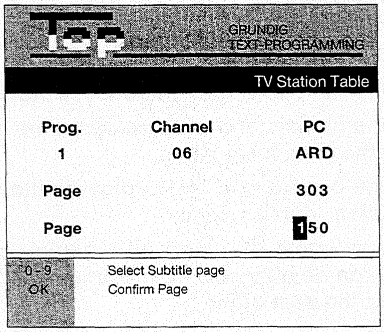
GRUNDIG TEXT-PROGRAMMING

TV Station Table

Prog.	Channel	PC
1	06	ARD
Page		303

0 - 9 Select Teletext page
OK Confirm Page

1.7 Confirm the page number 303 with button **OK or** enter another page number as **three digits** with the numbered buttons **1** ... **0** and confirm with button **OK**.
- The cursor jumps to the first position of the subtitle page number (only on the programme positions 1 to 9).



GRUNDIG TEXT-PROGRAMMING

TV Station Table

Prog.	Channel	PC
1	06	ARD
Page		303
Page		150

0 - 9 Select Subtitle page
OK Confirm Page

1.8 Confirm the subtitle page number 150 with button **OK or** enter another page number as **three digits** with the numbered buttons **1** ... **0** and confirm with button **OK**.
- The **TV Station Table** page will appear again and programme position 1 shows the entered data.

> ⚠ For the station positions 1 to 9 you can enter the page numbers as well as the subtitle page numbers according to your choice.

1.9 To select the next and further programme positions, use the buttons ▼ and ▲.

1.10 To switch over the TV Station Table to the programme positions 10 to 29 and 30 to 49, use button ▶; to switch back to the programme positions 10 to 29 and 1 to 9, use button ◀.

Following this example, up to 49 programme positions can be allocated to the channel/special channel numbers of the TV stations.

> ⚠ It is not possible to enter station abbreviations for the programme positions 20 to 49.

2. Erasing the data of a programme position

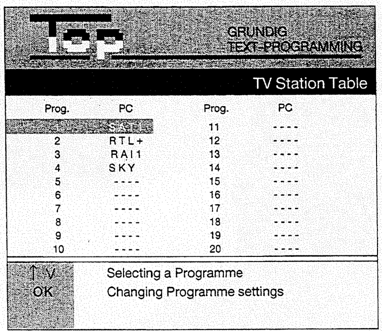
2.1 Select the programme position concerned with button ▼ or ▲.

2.2 Press button **CL**.
- The programme position is cleared and can be programmed anew.

3. Entries required for Satellite reception

(Satellite reception is only possible if a correspondingly equipped GRUNDIG Satellite Receiver is connected to the socket ⊖ **EURO-AV** ⊖ and to the **Universal** socket).

3.1 Select the **TV Station Table** page, then press button **SAT** (on level 1 of the remote control handset).
– The blue **TV Station Table** page appears.



GRUNDIG
TEXT-PROGRAMMING

TV Station Table

Prog.	PC	Prog.	PC
1	SAT1	11	----
2	RTL+	12	----
3	RAI1	13	----
4	SKY	14	----
5	----	15	----
6	----	16	----
7	----	17	----
8	----	18	----
9	----	19	----
10	----	20	----

↑ V Selecting a Programme
OK Changing Programme settings

3.2 Select the desired programme position with button ▼ or ▲, then press button **OK**.

3.3 Enter the station abbreviation as shown in the example of point **1.6**.

⚠ Enter the station abbreviations on the same programme positions as on the Satellite Receiver.

– Station abbreviations for up to 20 Satellite programmes can be entered.

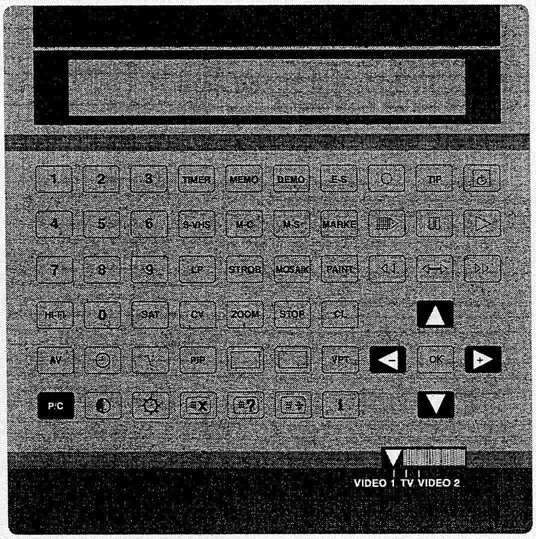
4. Terminating programming

4.1 Switch back to the **Info** page using button **i**.

4.2 Switch back to the television picture by pressing button **i** once again.

5. Fine tuning

The following buttons will be required



The recorder automatically tunes to best picture quality.
If nevertheless corrections should be required, then proceed as follows:

5.1 Select the programme position concerned with button ▼ or ▲.

5.2 Activate the fine tuning function. To do this, press button **P/C** once (level 1 of remote control).
– The display of the recorder shows for example:

1 *PROG* = programme position
6 C = the selected channel.

5.3 Press button ◀: the picture contours become softer.

5.4 Press button ▶: the picture contours become harder.
– By selecting the next programme position, the fine tuning adjustment is stored into the memory.
– If **VPS** appears in the display of the recorder, this means that the recorder is receiving this additional signal.

5.5 If **VPS** is flickering or goes out, this is the signal of poor reception. Correct tuning with button ◀ or ▶ until **VPS** is continuously illuminated and a good picture quality is obtained.

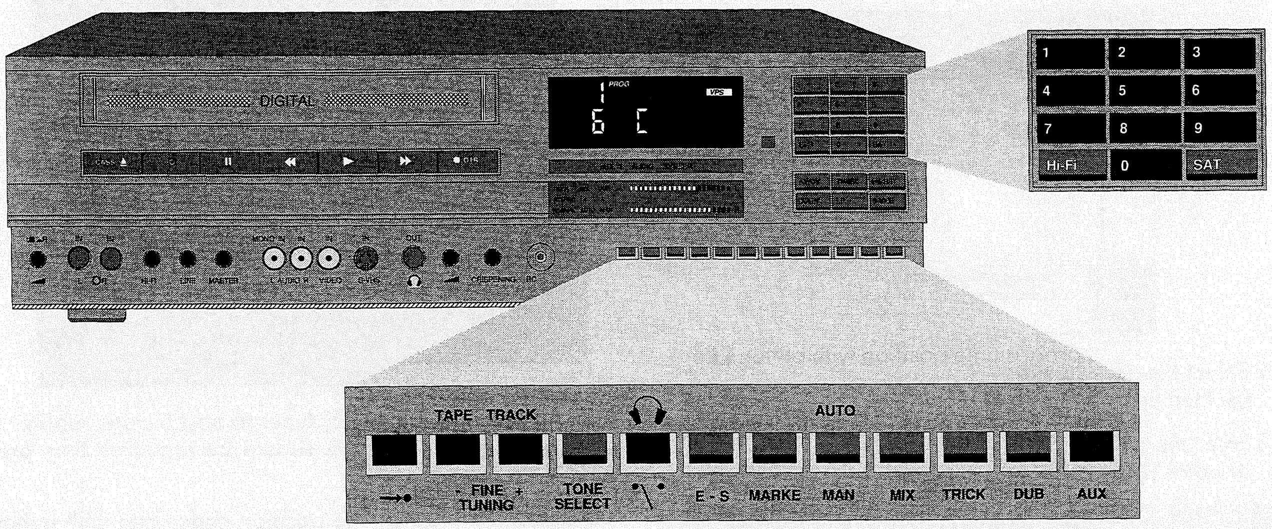
Tuning the Recorder to TV Stations

Second Possibility:

Tuning to TV stations using the buttons and the display of the recorder ...

... by entering the channel number.

The following buttons will be required



1. Example:

1.1 First press numbered button **1**, then button →•.
- Indication on the recorder:

1 *PROG* = programme position
6 C = channel number of a TV station (C = channel)

1.2 Enter the desired channel number as **two figures** using the numbered buttons **1 ... 0**.
- The channel number will **automatically** be stored into memory.

1.3 If you wish to enter special channel numbers (necessary for some cable TV programmes), first press button **AUX** (indication: C R), then enter the special channel number using the numbered buttons **1 ... 0**.

1.4 To select the next programme position, first press button •\•Ω: The indication C or C R goes out. Then step to the next programme positions using the buttons **– FINE TUNING +** and enter the channel numbers as described under point **1.2** or **1.3**.

Third Possibility:

Tuning to TV stations using the buttons and the display of the recorder ...

... and the automatic station search system

The recorder searches the TV channels from channel 1 to channel 80 (indication C), then the special channels S 1 to S 41 (indication CR).

1. Example

1.1 Press numbered button **1**, then button →•.
- Indication on the recorder:

1 *PROG* = programme position
6 C = channel number of a TV station.

1.2 Start the station search system by pressing button **→• a longer time**.
- The station search will now start to scan all of the TV channels and will stop when a station is found. If the station is not the desired one, start the station search again until the desired station is found.
- The channel number will **automatically be stored**.

1.3 To select the next programme position, first press button •\•Ω: The indication C or CR goes out. Now step forward or backward to the next programme position using the buttons **– FINE TUNING +** and start the automatic station search again.

---

2. Fine tuning

The recorder automatically tunes to best picture quality. If corrections should nevertheless be desired, then proceed as follows:

2.1 Select the programme position concerned (see points **1.1** and **1.4**).

2.2 Press button **– FINE TUNING**: The picture contours become softer.

2.3 Press button **FINE TUNING +**: The picture contours become harder.
- By selecting the next programme position the tuning point will be stored into memory.
- If **VPS** lights up in the display of the recorder, this means, that the recorder is receiving this additional signal.

2.4 If **VPS** is flickering or goes out, this is the sign that reception is poor. Correct the tuning point with the buttons **– FINE TUNING +** until VPS is steadily illuminated and the picture quality is good.

3. Terminating programming

3.1 Press button ⏻.

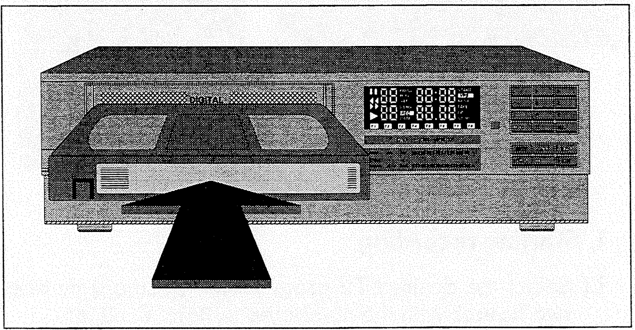
The S-VHS and the VHS Video Cassettes

The S-VHS and standard VHS video cassette

- Already existing VHS cassettes can be used without problems.
- S-VHS cassettes can be recorded according to the S-VHS format as well as to the standard VHS format.
- On playback, the recorder automatically recognizes the correct recording format.
- S-VHS recordings **cannot be played back on a VHS recorder.**

1. Inserting the cassette

1.1 Insert the cassette with the window to the top and the label visible into the cassette compartment until it is automatically pulled in. The recorder is now switched on.



2. Recognition of the playing time

If you use hours cassettes (S-VHS cassettes SE60...SE180), VHS cassettes E60...E240), the recorder measures the playing time (indication ATTS) and briefly indicates the total playing time (in hours) and the elapsed playing time (in hours and minutes) of the cassette.

C3 = total playing time of the cassette
0.01 = elapsed playing time of the cassette (= 1 minute)

– With **all other cassettes** (also with the 5 hours cassette E300), the recorder automatically switches to the **six-digit** tape length indication (000000).

2.1 To manually switch over from the hours/minutes indication to the six-digit tape length indication, press button **OK** on the **remote control** or button **COUNT.** on **the recorder.**

2.2 Principally it is possible to enter for all cassettes the total playing time (in minutes) with the numbered buttons **1...0**, and to confirm the entry with button **OK on the remote control** or with button **COUNT. on the recorder** (eg: 30 for a cassette with 30 mins. playing time or 195 for a cassette with 195 mins. playing time).

– This applies also for exceptional cases, in which the indication for the playing time on the cassette and the indication of the total playing time are not conform.

3. Longplay operation

3.1 With button **LP**, the playing time of the used cassette can be doubled.

– The recorder recognizes the selected mode – standard play or longplay – and automatically switches to the correct mode when playback is selected.

– The display of the recorder shows:

LP = longplay mode,
the **playing time** of the cassette is **doubled**.

4. Cassette recognition

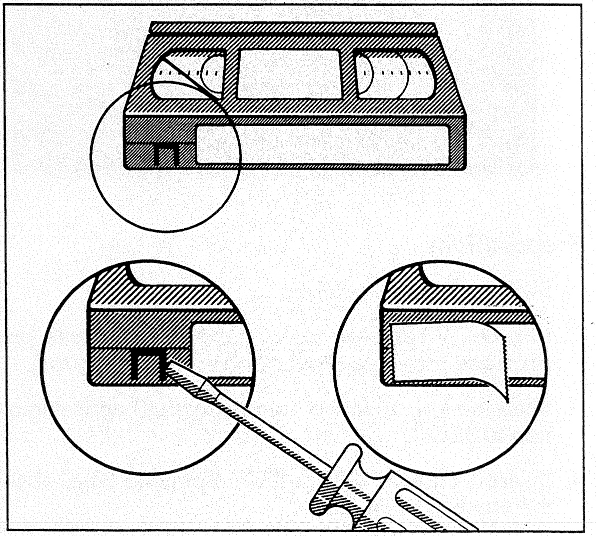
The recorder recognizes the cassette format (standard VHS cassette or S-VHS cassette) and automatically selects the operating mode for the respective cassette format.
If an S-VHS cassette is used, **S-VHS** will additionally appear in the display of the recorder.

5. Removing the cassette

5.1 Press button **CASS ⏏ on the recorder** to eject the cassette.

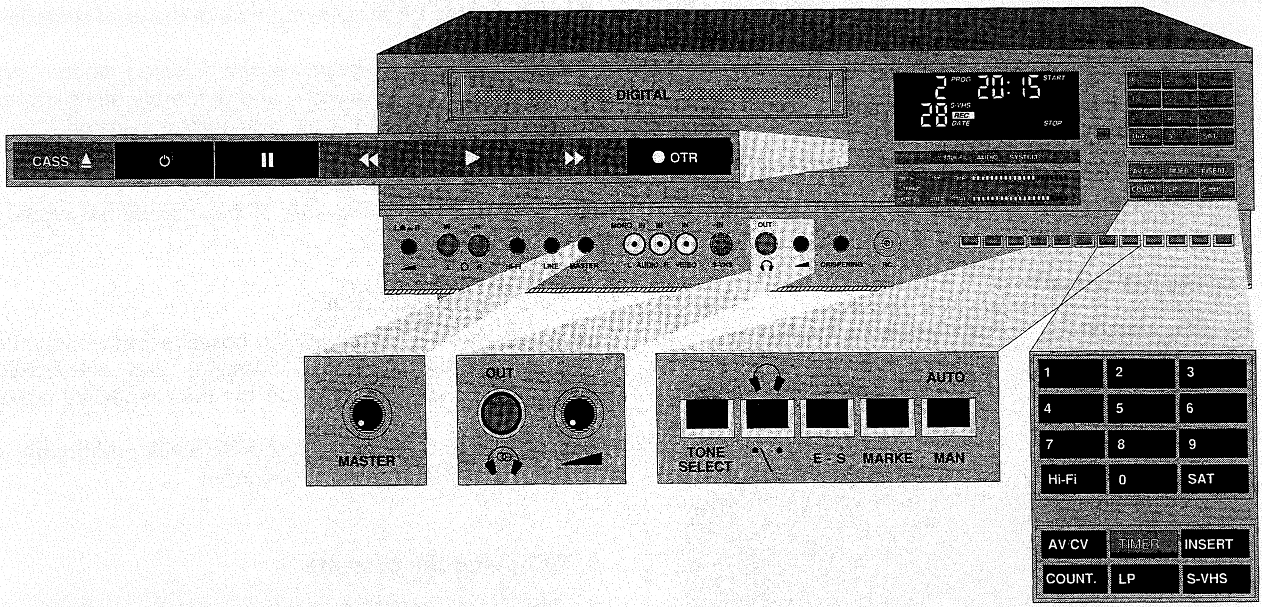
6. Protect your recordings against accidental erasure

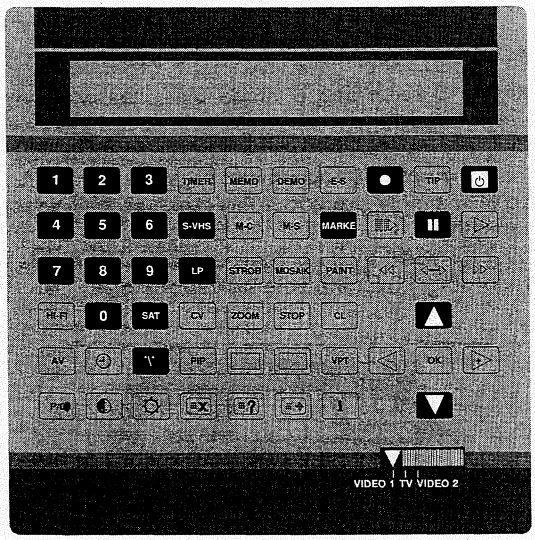
Whenever a recording is made on a cassette, any recording already on the tape will automatically be erased. For this reason, provision is made to prevent your recordings from accidental erasure.
To do this, simply break out the erase protection lug of the cassette.
If you later wish to use a cassette protected in this way for recording, cover the hole with sticky tape.



Recording

The following buttons will be required


CASS ▲
II
◀◀
▶
▶▶
● OTR
DIGITAL
MASTER
OUT
TONE SELECT
E-S
MARKE
MAN
AUTO
1
2
3
4
5
6
7
8
9
Hi-Fi
0
SAT
AV·CV
TIMER
INSERT
COUNT.
LP
S-VHS


1
2
3
TIMER
MEMO
DEMO
E-S
TIP
4
5
6
S-VHS
M-C
M-S
MARKE
II
7
8
9
LP
STROB
MOSAIK
PAINT
HI-FI
0
SAT
CV
ZOOM
STOP
CL
AV
PIP
VPT
OK
VIDEO 1 TV VIDEO 2

Preparations

1. Switch on the TV receiver.
2. On the TV receiver, select the AV programme position provided for video playback (serves as monitor).
3. Slide the switch on the remote control handset into position **VIDEO 1**.
4. Insert a cassette with sufficient playing time, observing the erase prevention.
5. The recorder automatically recognizes whether S-VHS cassettes or standard VHS cassettes are used.
   If an S-VHS cassette is to be recorded **exclusively** in the standard VHS mode, press button **S-VHS** (the ***S-VHS*** indication in the display disappears).
6. If desired, select longplay operation by pressing button **LP** (***LP*** lights up in the display).

1. Starting recording

1.1 Select the desired **TV programme** (position) as **one** or **two figures** with the numbered buttons **1** ...**0, or**

1.2 select the desired **Satellite programme** as **one** or **two figures** with the numbered buttons **1**...**0**, then press button **SAT**.

1.3 Press button ● to start recording.
- The recording level will automatically be controlled.
- Indications on the recorder, for example:

2 *PROG* = programme position 2 selected
18:30 *START* = switch-on time of recording
REC = recording indication
10 *DATE* = day of date
: *STOP* = request to enter the switch-off time.

⚠ If no switch-off time is entered, the display switches over after a short time to hours/minutes indication and the recording will be continued until the tape end is reached.
Then the recorder switches automatically to rewind and stops the tape when its beginning is reached.

1.4 Enter the desired switch-off time as **four figures** with the numbered buttons **1**...**0** and confirm with button **●, or**

1.5 determine the switch-off time by entering 30-minutes steps. To do this, press button ● as often as required (max. 10 times = 300 minutes).
- After a short period of time, the total playing time (eg: C3) and the elapsed playing time will appear in the display.
- The recording can simultaneously be checked on your TV set (in the AV programme position).
- You may also watch another programme on the TV set without interfering with the recording.

1.6 To change the switch-off time, press button ● during recording and repeat the point **1.4** or **1.5**.

1.7 Button **MARKE** permits to mark certain scenes during recording. When the Edit-Search function is selected (see chapter "Playback", point **12**), the recorder searches these marks and starts playback.

2. Recording – pause

2.1 Press button **II** during recording.

2.2 Continue recording with button **II** or ●.
- The pause mode is time-limited. After the timeout, the recorder switches to Stop.

3. Terminating recording

3.1 Terminate the recording by pressing button ⏻.

4. Clean joins between recordings (Assembly-editing)

4.1 During playback, search the tape position where you wish the "new" recording to be joined, then press button **II**.

4.2 Start the new recording. To do that, select the desired programme with the numbered buttons **1** ... **0**, then press button ●.
- On playback, the recordings will follow each other without any fuzzy lines between them.

5. Posterior insertion of new recordings (Insert-editing)

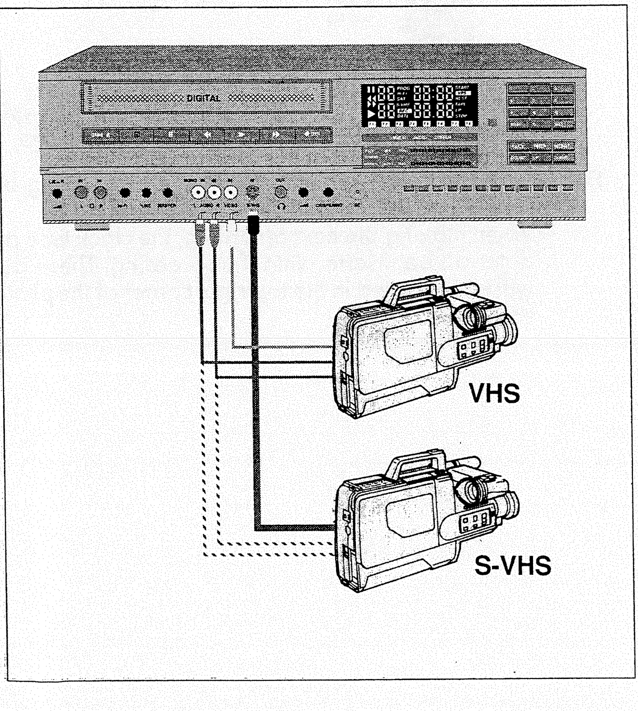
It is possible to insert "new" recordings between existing recordings at a later date, eg: certain scenes being played back by external picture or sound sources.

Connection

Connect a **camera recorder** to the sockets **AUDIO IN** and **VIDEO IN** on the front of the recorder.

Connect an **S-VHS camera recorder** or an **S-VHS recorder** to the sockets **S-VHS IN** (video signal) and **AUDIO IN** (audio signal) on the front of the recorder.

Connect a **VHS recorder** to the socket ⊕ **EURO-AV** ⊖ on the back of the recorder.



Operation

5.1 It is recommended to switch over the hours/minutes indication to tape length indication by pressing button **COUNT.** (on recorder) or button **OK** (on remote control). The tape length indication can be re-set to 000000 by pressing button **0** and then button **COUNT.** on the recorder, or button **0** and then button **OK** on the remote control.

5.2 During playback, search the point on the tape where the recording which you wish to insert should be terminated. Now press button **II** and then button **MARKE**.
- In doing so, the tape position is **electronically marked**.

5.3 During playback, search the point on the tape where the recording which you wish to insert should begin. Press button **II**, then button **INSERT** (on the recorder).
- The recorder is automatically switched to **recording/pause**.

5.4 Select the programme of the picture/sound source by repeatedly pressing button ▼ on the remote control until the desired indication appears on the recorder:

AV = picture/sound source on socket ⊕ **EURO-AV** ⊖.
CV = picture/sound source on the sockets **AUDIO IN** and **VIDEO IN**;
S1 = picture/sound source on the sockets **S-VHS IN** and **AUDIO IN**.

5.5 If you wish to record also the sound, additionally press the button **Dub.** on the recorder.

5.6 Start playback from the external picture/sound source.

5.7 Press button **II** to start the "Insert" function.
- The display of the recorder shows: In (Insert).
- The new scenes are inserted between the marked tape positions. When this is done, the recorder switches to playback.

6. Recordings from other units

Recording
- of radio broadcasts is described on the pages 47 to 49;
- from a second standard VHS recorder or from another S-VHS recorder is described on the pages 50 and 51;
- from a camera recorder is desribed on page 52.

Particularities when making sound recordings

7. The different sound tracks

Your recorder is provided with two different sound recording and playback systems.

7.1 The hifi or helical sound track for stereo and two-channel recordings.

7.2 The mono or longitudinal sound track for sound reproduction on standard VHS recorders or for "mixed" sound recording.
- When starting recording, the sound will be recorded with **both** systems.
  In the case of two-channel broadcasts you can select, which channel (1 or 2) is to be recorded on the longitudinal (mono) sound track.

- In the case of two-channel broadcasts, the recorder automatically selects the sound track 1 (track dubbed in the local language).
- If you wish to record the sound track 2 (track with the original language), then press button **TONE SELECT** on the **recorder**, or button •\• on the **remote control**.
- The sound display will show either **1** for sound track 1, or **2** for sound track 2.

8. Recording level control

After having selected the programme (= looped mode), the recorder **automatically** controls the sound level.
- The sound display of the recorder shows ***AUTO***.

8.1 If you wish to manually control the recording (sound) level, press button **MAN/AUTO** (only on the recorder).
- The sound display of the recorder shows ***MAN***.

8.2 Turn the **MASTER** control (press to unlock) to the right, until the **first red mark** (+1 dB) lights up during the loudest passages of the recording.
The **second** red mark should not light up (overmodulation).

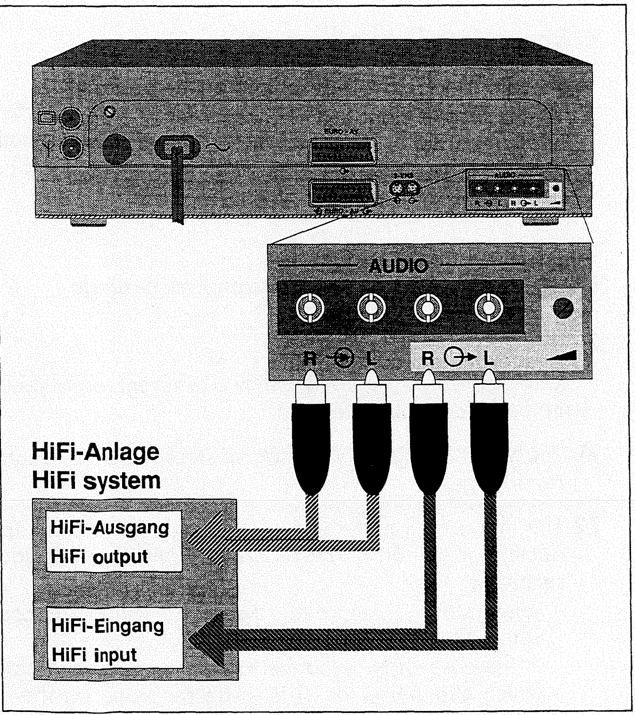
8.3 Press button **for a longer time** to start recording.

9. Parallel (simultaneous) dubbing

It is possible to record simultaneously with the picture the sound from an external sound source, eg: a concert being broadcasted simultaneously on TV and on radio (FM band).
On the hifi (helical) track the radio tone, and on the mono (longitudinal) track the TV tone will be recorded.

Connection

Connect the external sound source (eg: stereo system) with a commercially available audio cable (phono plug) to the **AUDIO** sockets.



Recording

9.1 Insert a cassette, observing the erase protection.

9.2 Select the TV programme (position) with the numbered buttons **1** ... **0**, then press button **HiFi**.

9.3 Press button ● to start recording.
- On playback, it is possible to switch over between television and radio sound with button **TONE SELECT** on the recorder, or button •\• on the remote control.

10. Checking the sound via a headphone

In the case of two-channel broadcasts, you can check the different sound tracks via a stereo headphone (connected to socket 🎧 **OUT**).

10.1 Button 🎧•\• (only on the recorder) permits to select between sound track 1 and 2.

10.2 The sound volume of the headphone can be adjusted with the control ◢ (release button by pressing on it).

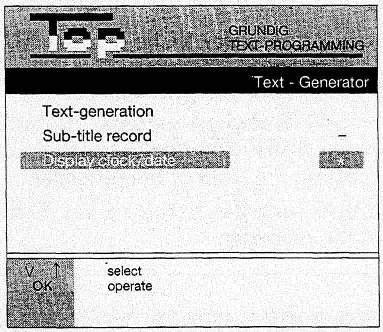
11. Additional recording of the clock time and date

It is possible to add to each recording the time of day and the date.
These entries are only possible with the remote control.

11.1 Select the information page **Info** with button **i**.

11.2 Select the line **Text-Generator** in the **Info** page using the numbered button **3**.

11.3 Select the line **Display clock/date** in the **Text-Generator** page using button ▼ and confirm with button **OK**.



Text - Generator

Text-generation
Sub-title record –
Display clock/date *

select
operate

- An asterix (✱) appears behind the line **Display clock/date** to show that this function is activated.

11.4 Switch back to the television picture by pressing button **i twice**.
- When making **the next recording**, the clock time and date will be inserted into the recording. These data will be indicated in the top right corner of the picture screen.

Programming Recordings (Timer Recordings)

Your recorder can be programmed so that it records at a later date.

You can programme:
- eight separate broadcasts over a period of 12 months, or
- daily or weekly broadcasts at the same time,
- with or without VPS control,
- in standard or longplay mode,
- with or without parallel dubbing.

There are five programming methods possible:
- Fast programming with the **VPT** button of the remote control, with the text programming facility, and with the Teletext pages of the broadcasting stations (see enclosed brief instructions).
- With the remote control, with the text programming facility, and with the Teletext pages of the broadcasting stations.
- With the remote control, with the text programming facility, and with manual data entry.
- With the remote control and its display.
- With the buttons and the display on the recorder.

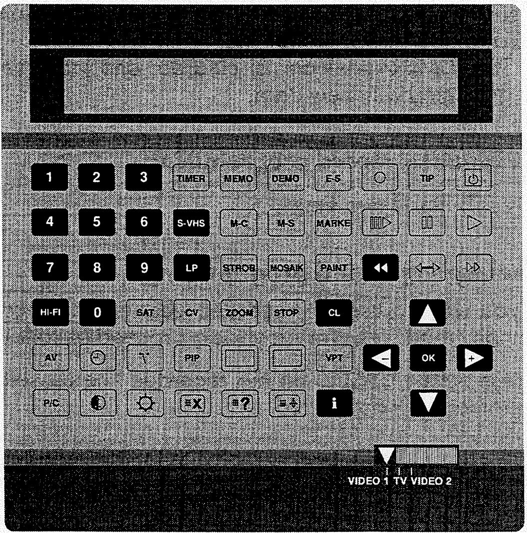
Preparations

1. Switch on TV receiver.
2. Select the AV programme position provided for video playback on the TV receiver (serves as monitor).
3. Slide the switch on the remote control into position **VIDEO 1**.
4. Check the clock time and the date on the recorder.
5. Insert a cassette with sufficient playing time, observing the erase prevention.
6. The recorder automatically recognizes whether the used cassette is an S-VHS or a standard VHS cassette.
   If you wish to record on an S-VHS cassette **only** in the standard VHS mode, press button **S-VHS**: the indication **S-VHS** in the display disappears.

Possibility 2:

Programming with the remote control, the text programming facility, and the Teletext pages of the broadcasting stations.

The following buttons will be required

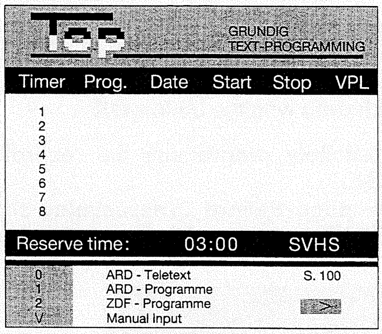


1. Example: programme position 1, ARD-Videotext, page 303

1.1 Select the **Info** page using button **i**.

1.2 Select the line **Record Programming** in the **Info** page using numberd button **1**.

– The page **Record Programming** appears.



TOP GRUNDIG TEXT-PROGRAMMING

Timer	Prog.	Date	Start	Stop	VPL
1					
2					
3					
4					
5					
6					
7					
8					

Reserve time: 03:00 SVHS

0 ARD - Teletext S. 100
1 ARD - Programme
2 ZDF - Programme
V Manual Input

⚠ If you wish to programme with the Videotext (Teletext) pages of the programme positions 1 ... 9, then press button ▶.
- The **dialogue line** will show one after the other the programme positions with the station abbreviations.
- ● Repeatedly press button ▶ to step through the programme positions **1 ... 9** in the **dialogue line**.
- ● The ARD programme offer and the ZDF evening programmes can be selected with the numbered buttons **1** (ARD) or **2** (ZDF) (preset in the factory).
- ● The Teletext page **used last** can be selected with the numbered button **0**.

1.3 Select the Teletext page 303 with the numbered button **1**.
- Page 303 will appear after a short time.
- On the ARD programme page, a rectangle (cursor) appears next to the clock time of the first broadcast.

1.4 Select the desired programme by repeatedly pressing button ▼ until the cursor is positioned next to the clock time of this programme (broadcast).

1.5 Confirm this selection with the button **OK**.
- The data of this broadcast will be transferred into the first memory position.
- If a **V** appears **below** VPL, then this broadcast is controlled and recorded with the VPS system.

⚠ The cursor signals you if you have to complete (add) data.

1.6 Complete the data with the numbered buttons **1 ... 0** and confirm the other timer data with button **OK**.

> ⚠ Observe the dialogue lines.

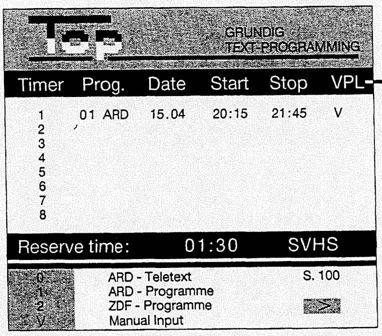
1.7 You now can ...
... **programme** the broadcast **definitely** by pressing button **OK, or**
go back to the Teletext page 303 (to programme another broadcast) by pressing button ◁◀, **or**
modify or complete the programming by pressing button ◄ and repeating points **1.8**, **1.9** and **1.10**.

1.8 For **simultaneously dubbing** the recording (the sound will be fed in via the sockets **AUDIO L ⊖ R**), press button **Hi-Fi**.
Indication: **P** below VPL.

1.9 To **double** the recording time of the cassette press button **LP**. Indication: **L** below VPL.

1.10 To record **without VPS** press button ▼ (if the start and the VPS times differ), enter the new start time with the numbered buttons **1**...**0**, then confirm the remaining TIMER data with the button **OK**.

1.11 To **definitely programme** the recording, press button **OK**.
- The page **Record Programming** shows all of the 8 TIMER positions; TIMER position 1 is occupied.



Timer	Prog.	Date	Start	Stop	VPL
1	01 ARD	15.04	20:15	21:45	V
2					
3					
4					
5					
6					
7					
8					

Reserve time: 01:30 SVHS

→ **V P L** means:

V = with or without VPS control

P = with or without parallel dubbing

L = longplay or standard mode

- **Reserve time** means the time left for further recordings.

Following this example, you can programme 7 further TIMER positions with different data.

> ⚠ If the **Reserve time** is negative (–) and marked by a red background, a cassette with insufficient playing time has been inserted, or the sum of all TIMER recording times is too large.
>
> ⚠ If the message **Record period** and/or **Cass** appears instead of the **Reserve time** ...
> ... no cassette has been inserted;
> ... the inserted cassette is protected against accidental erasure;
> ... a non-standard cassette is being used.
>
> ⚠ If **Record Timer overlap** appears in the red line (the TIMER positions concerned are marked by a red background), the recording times of the TIMER positions overlap each other.
> To change the entered data of a TIMER position, press button ▼, select the data to be changed with the cursor button ► or ◄, enter the new data, and confirm the data line step by step with button **OK**.

1.12 To exit the "Record Programming" mode, press button **i two times**.
- On the TV screen you will see the colour test pattern. The indication **Automatik** (with red background) signals that the recorder is ready for recording.
- The display of the recorder will show the data of the TIMER position which is the first in the time sequence.
- The recorder will automatically start the recording at the programmed time.

> ⚠ If you are still in the "Record Programming" mode, ten minutes before the beginning of the recording the following message will appear:
> **Record begins soon – EXIT TEXT.**
> If the message
> **Record start time has passed** appears, you must exit the "Record Programming" mode **immediatelly** so that the recorder can start recording.

2. Changing individual data of a TIMER position

2.1 Select the **Info** page with button **i**.

2.2 Select the **Record Programming** page with the numbered button **1**.

2.3 Select **Manual Input** with button ▼.

2.4 Select the TIMER position concerned with button ▼ or ▲.

2.5 Use button ► or ◄ to position the cursor to the data to be changed, and enter the new data with the numberd buttons **1**...**0**. Confirm the data line step by step with button **OK**.

3. Erasing occupied TIMER positions

3.1 Select page **Info** using button **i**.

3.2 Select page **Record Programming** with numbered button **1**.

3.3 Select **Manual Input** with button ▼.

3.4 Select the TIMER position to be erased with button ▼ or ▲ and clear it with button **CL**.
- The TIMER position is cleared and can be programmed with new data.

4. Terminating record programming

4.1 Press button **i two times**.

5. Interrupting record programming

If you wish to use the recorder when it is in recording standby mode, eg: for playback, proceed as follows:

5.1 Press button **CASS ▲ on the recorder**. The cassette will automatically be ejected.

> ⚠ The recording standby mode of the recorder is now **interrupted**.

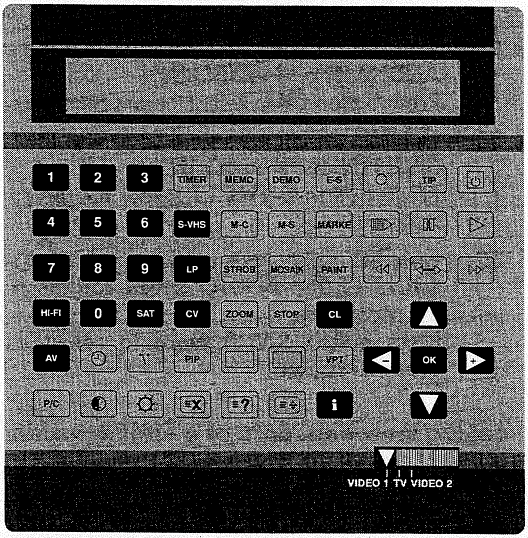
5.2 Select the desired function.

5.3 Now again insert a cassette with sufficient playing time, wait until the ATTS (cassette time) measurement is terminated, then press button **i two times**.
- The recorder is back again in recording standby mode (**Automatik**) and the TIMER recording will be executed at the programmed times.

Possibility 3:

Programming with the remote control, the text programming facility, and by manual data entry.

The following buttons will be required



⚠ Preparations as described on page 23.

1. Example

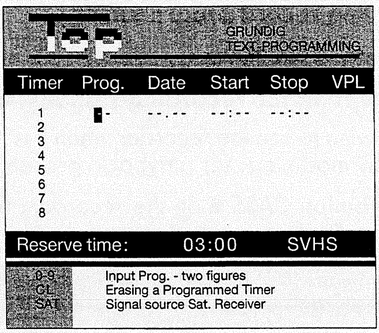
1.1 Select the **Info** page with button **i**.

1.2 Select the line **Record Programming** in the **Info** page using numbered button **1**.
– The page **Record Programming** appears.

1.3 Select the function **Manual Input** in the **Record Programming** page using button ▼.
– A blue rectangle (cursor) marks the TIMER position 1.

1.4 The cursor buttons ▼ and ▲ permit to select free TIMER positions.

1.5 Activate the selected TIMER position with button ▶.
– Horizontal lines appear in the selected TIMER position and a black cursor marks the first position of **Prog.** (programme).



```
TOP                GRUNDIG
                   TEXT-PROGRAMMING
Timer  Prog.  Date   Start  Stop   VPL
1       ▮-    --.--  --:--  --:--
2
3
4
5
6
7
8
Reserve time:      03:00     SVHS
0-9   Input Prog. - two figures
CL    Erasing a Programmed Timer
SAT   Signal source Sat. Receiver
```

⚠ The recorder will not accept wrong entries (eg: 50 = non-existent programme position). The cursor will jump back to the first position of the data field. Correct the entry with the numbered buttons **1** ... **0**.

⚠ When entries made according to the points **1.6** to **1.9** must be corrected, move the cursor to the desired positions using the buttons ◀ and ▶.

⚠ Please observe the dialogue lines.

1.6 What do you wish to record?

1.6.1 TV broadcasts
Enter the desired programme position as two figures with the numbered buttons **1**...**0** (eg: **0** and **2** for programme position 2).

1.6.2 Satellite programmes
Press button **SAT**, then select the desired Satellite programme position as two figures with the numbered buttons **1** ... **0**.
– The data line for Satellite programmes will be marked by a blue background.

⚠ For recording satellite programmes, an appropriate GRUNDIG Satellite Receiver must be connected to the sockets ⊕ **EURO-AV** ⊖ and **Universal** on the back of the recorder.

1.6.3 Radio programmes
Press button **Hi-Fi**.
– When making sound recordings, no programme position must be entered.

⚠ For recording radio programmes, an appropriate stereo system must be connected to the sockets **AUDIO R** ⊕ **L** on the back of the recorder.

Further recording possibilities and the required entries for these are to be found at the end of this chapter, points 1.6.4 to 1.6.7.
– After having selected the programme, the cursor jumps to the **date** field, and the actual date will be indicated.

1.7 When do you wish to record?

1.7.1 Confirm **today's date** (for recordings to be made the same day) with the **OK** button, **or**

1.7.2 enter the **desired date** (for recordings to be made at later dates) as **4 figures** using the numbered buttons **1** ... **0** (day and month), **or**

1.7.3 **for "daily" recordings at the same day (Every-Day),** enter the day of the date as **two figures** using the numbered buttons **1** ... **0**, then press button ▲.
– Indication: Figure of the day and **ED** (= every day)
– From the selected day on, recordings will be made every day, **or**

1.7.4 **for "weekly" recordings at the same day (Every-Week)** enter the day of the date as **two figures** using the numbered buttons **1** ... **0**, then press button ▼.
– Indication: Figure of the day and **EW** (= every week).
– From the selected day on, recordings will be made every week.
– The cursor jumps to **Start**.

1.8 Enter the **start time** as **four figures** using the numbered buttons **1** ... **0**.
– The cursor jumps to **Stop**.

1.9 Enter the **stop time** as **four figures** using the numbered buttons **1** ... **0**.
– The cursor jumps below the **V** of **VPL** (not on hifi tape recordings).

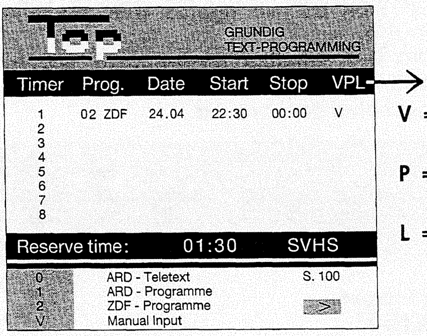
1.10 If **VPS** is not desired, clear this function by pressing button ▼.

Programming Recordings

1.11 To select **parallel dubbing** (if desired), press button **Hi-Fi**.
- Indication: **P** below VPL.

1.12 To select **longplay mode** (if desired), press button **LP**.
- Indication: **L** below VPL.

1.13 To **definitely confirm** recording, press button **OK**.
- The TIMER position is completely programmed and the page **Record Programming** shows the TIMER positions with the programmed data.



Timer	Prog.	Date	Start	Stop	VPL
1	02 ZDF	24.04	22:30	00:00	V
2					
3					
4					
5					
6					
7					
8					

Reserve time: 01:30 SVHS

0 ARD - Teletext S. 100
1 ARD - Programme
2 ZDF - Programme >
V Manual Input

V P L means:

V = with or without VPS control

P = with or without parallel dubbing

L = longplay or standard mode

- **Reserve time** indicates the remaining playing time of the tape.

Following this example, 7 further TIMER positions can be programmed.

> ⚠ If **Reserve time** is negative (–) and marked by a red background, a cassette with insufficient playing time has been inserted, or the sum of all TIMER recording times is too large.
>
> ⚠ If the message **Record period** and/or **CASS** appears **instead of the Reserve time**, ...
> ... there is no cassette in the unit;
> ... the cassette is protected against accidental erasure;
> ... a non-standard cassette is being used.
>
> ⚠ If **Record time overlap** appears in the red line (the TIMER positions concerned are marked by a red background), the recording times of the TIMER positions overlap each other. If this should be the case, the entered data of the TIMER positions must be changed: Press button ▼, select the data to be changed with button ▶ or ◀, enter the new data, and confirm the data line step by step with button **OK**.

1.14 Now exit the "Record Programming" mode by pressing button **i two times**.
- The colour test pattern appears on the TV screen. **Automatik** (with red background) signals the recording standby mode of the recorder.
- The recorder display shows the programmed data of the TIMER position being the first in the time sequence.
- The recorder automatically switches to recording.

> ⚠ If you are still in the "Record Programming" mode, the message **Record begins soon – EXIT TEXT** will appear 10 minutes before the beginning of the recording. If the message
> **Record time has passed** appears, immediatelly exit the "Record Programming" mode, so that the recorder can start the recording. To do that, press button **i two times.**

Programming recordings is also possible for external units

Examples:

1.6.4 AV = Connect a picture/sound source to socket ⊖ **EURO-AV** ⊖.
Press button **AV** to select the programme source.

1.6.5 CV = Connect a picture/sound source to the sockets **AUDIO IN** and **VIDEO IN**:
Press button **CV** to select the programme source.

1.6.6 S 1 = Connect a picture/sound source to the sockets **S-VHS IN** and **AUDIO IN**.
Press button **S-VHS** to select the programme source.

1.6.7 S 2 = Connect a picture/sound source to the sockets **S-VHS** ⊖ and **AUDIO R** ⊖ **L** (on the back of the recorder).
Press button **S-VHS twice** to select the programme source.

2. Changing individual data of a TIMER position

2.1 Select the **Info** page with button **i**.

2.2 Select the page **Record Programming** with numbered button **1**.

2.3 Select **Manual Input** in the page with button ▼.

2.4 Select the TIMER position concerned with button ▼ or ▲.

2.5 Select the data to be changed with button ▶ or ◀, enter the new data with the numbered buttons **1 ... 0**, and confirm the data line step by step with button **OK**.

3. Erasing programmed TIMER positions

3.1 Select the **Info** page with button **i**.

3.2 Select page **Record Programming** with the numbered button **1**.

3.3 Select **Manual Input** with button ▼.

3.4 Select the TIMER position to be erased with button ▼ or ▲ and clear it with button **CL**.
- The TIMER position is cleared and can be programmed anew.

4. Terminating record programming

4.1 Press button **i two times**.

5. Interrupting the recording standby mode

If you wish to use the recorder when it is in the recording standby mode, eg: for playback, proceed as follows:

5.1 Press button **CASS ≜** on the recorder: the cassette will automatically be ejected.

> ⚠ The recording standby mode of the recorder now is interrupted.

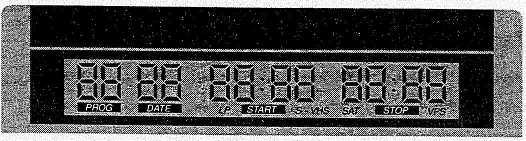
5.2 Select the desired function.

5.3 When the function has been performed, again insert a cassette with sufficient playing time, wait until the ATTS measurement is terminated, then press button **i two times.**
- The recorder is in recording standby mode again (**Automatik**), and the TIMER recordings will be made at the programmed times.

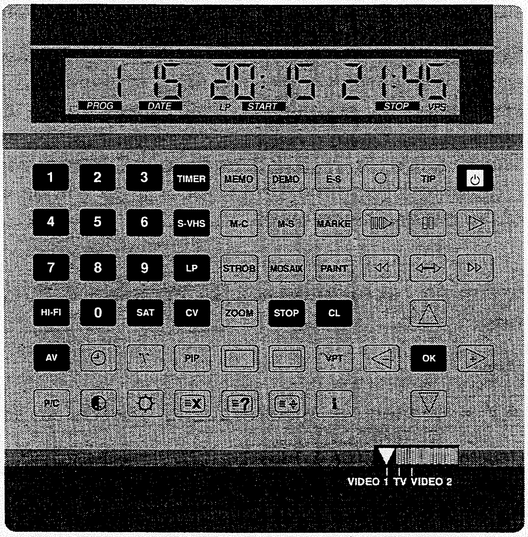
Possibility 4:

Programming with the remote control and its display

In this case, you enter the recording data into the remote control. During programming, you will be guided step by step by the display of the remote control:
A blinking indication will invite you to enter the respective data.



The following buttons will be required.



⚠ **Preparations** as described on page 23.

1. Programming example:

1.1 Press button **TIMER,** ***PROG*** flashes in the display.

⚠ If there are still data indicated in the display, these must be cleared by pressing button **CL** and then button **OK**.

⚠ If the letter **F** appears in the display of the remote control, the entered data are not accepted (eg: 32.09. = wrong date).

⚠ Wrong data can be cleared with button **CL** as long as the data field is flashing.

⚠ For longplay operation press button **LP**.

From now on, confirm each entry with button **TIMER** or **OK**.

1.2 What do you wish to record?

1.2.1 TV programmes
To do that, select the **desired TV programme (position)** with the numbered buttons **1** ... **0** and confirm the selection.

1.2.2 Satellite programmes
To do that, press button **SAT** (indication: *SAT*), select the desired Satellite programme with the numbered buttons **1** ... **0**, and confirm the selection.

⚠ An appropriate GRUNDIG Satellite receiver must be connected to the socket ⊕ **EURO-AV** ⊖ and to the **Universal** socket on the back of the recorder.

1.2.3 Radio programmes
To do that, press button **Hi-Fi** (indication: HI).
- When making sound recordings, no programme position must be selected.

⚠ A stereo system must be connected to the sockets **AUDIO R** ⊕ **L** on the back of the recorder.

- ***DATE*** is flashing, **S-VHS** is illuminated (has no effect on programming).

Further recording possibilities with the required entries are to be found at the end of this chapter, points **1.2.4** and **1.2.5**.

1.3 When do you wish to record?

1.3.1 Enter the desired date
as **four figures** (day and month) with the numbered buttons **1** ... **0** and confirm the entry, **or**

1.3.2 for "daily" recordings at the same time
press the numbered button **0** instead of entering the date and confirm the entry, **or**

1.3.3 for "weekly" recordings at the same time
enter the day of the date as **two figures** with the numbered buttons **1** ... **0**, press the numbered button **0 two times** instead of entering the month, and confirm the entry.
- ***START*** is flashing.

1.4 Enter the **start time** as **four figures** with the numbered buttons **1** ... **0** and confirm the entry.
- ***VPS*** is flashing (not on hifi sound recordings).

1.5 Confirm **VPS or** clear it with numbered button **0**.
- ***STOP*** is flashing.

1.6 Enter the **stop time** as **four figures** with the numbered buttons **1** ... **0** and confirm the entry.
- ***STOP*** is flashing.

The TIMER position of the remote control now is completely programmed.

Before transmitting the TIMER data to the recorder, you can:

2. Correct TIMER data of the remote control:

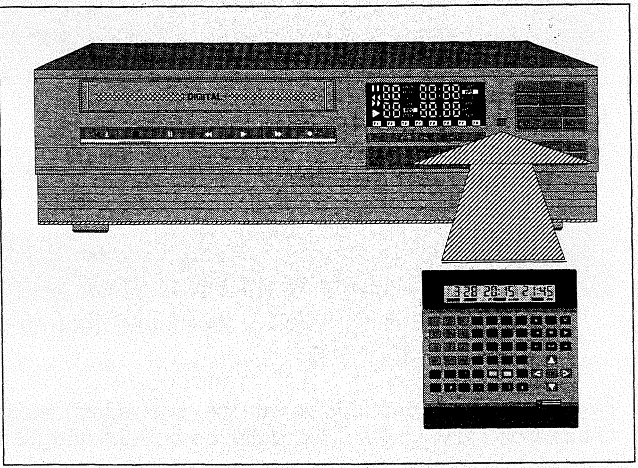
2.1 Repeatedly press the **TIMER** button until the data field concerned (PROG, DATE, START, VPS or STOP) is flashing in the display.

2.2 "Overwrite" the data with the numbered buttons **1** ... **0** and confirm the remaining data with button **TIMER or** button **OK**.

Programming Recordings

3. "Transmitting" TIMER data of the remote control

3.1 Press and hold button **OK** and at the same time point the remote control at the recorder until the symbol □ in the **display of the remote control** goes out.



⚠ If the symbol □ appears in the **display of the recorder**, transmit the data again. To do that:

3.2 Press button **TIMER** and then button **OK**.
- The recorder accepts the data from the remote control and indicates them in its display and in the page "Record Programming".
  From now on, the drive mechanism buttons are blocked.
- The remaining playing time of the tape will briefly be indicated in the display of the recorder (exception: on daily and weekly recordings at the same time).

4. Possible indications on the recorder:

If, instead of the remaining playing time ...

... FULL appears in the display of the recorder, a cassette with insufficient playing time has been inserted.
If the sum of all recording times is greater than the **total playing time** of the cassette, recording takes place until the tape end is reached, the recorder automatically switches to fast rewind and switches off when the tape has reached its beginning.

... --:-- appears, the playing time of the cassette has not been recognized.

... CASS appears, then check the erase prevention or insert a cassette.

... COLL appears, the TIMER recording times overlap each other.

5. "Switching off" the display of the remote control

5.1 Press button **STOP**.
- The display goes out, but the TIMER data can be retrieved at any time with the button **TIMER**.
- After approx. 1 minute, the display is automatically switched off.

6. Clearing TIMER data of the remote control

6.1 Press button **TIMER**.
- The TIMER data appear in the display.

6.2 To clear the TIMER data, press button **CL** and then button **OK**.
- The display of the remote control is free for new data entries.

7. Interrupting the recording standby mode

If you wish to use the recorder when it is in its recording standby mode, then

7.1 press button ⏻ **for a longer time**.
- The TIMER data in the display of the recorder disappear; the TIMER indication of an occupied position is flashing. You now can perform the desired function.

7.2 When having terminated the function, again insert a cassette with sufficient playing time, wait until the ATTS measurement is completed, then press button **i two times**.
- The recorder is switched back to recording standby (**Automatik**) and the TIMER recordings will be made at the programmed times.

Programming recordings is also possible with external units

Examples:

1.2.4 AV = connect a picture/sound source to socket ⊖ **EURO-AV** ⊖.
Press button **AV** to select the programme source.

1.2.5 CV = connect a picture/sound source to the sockets **AUDIO IN** and **VIDEO IN**.
Press button **CV** to select the programme source.

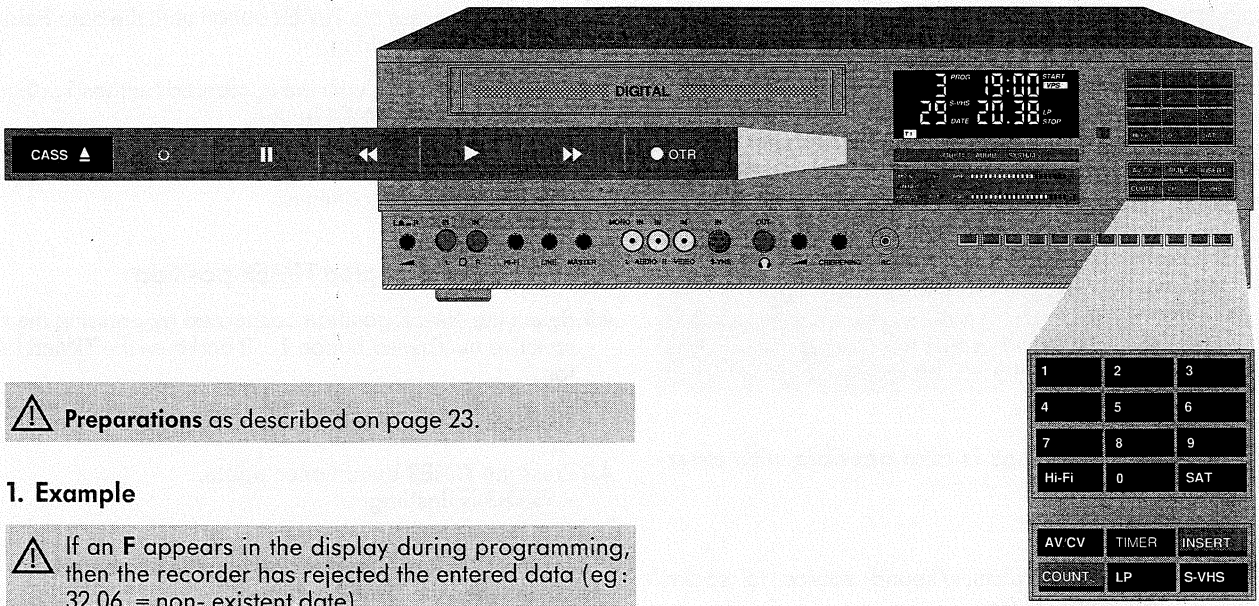
Programming Recordings

Possibility 5:

Programming with the buttons and the display on the recorder.

The following buttons will be required.

The display of the recorder will guide you step by step. Flashing indications will invite you to enter the respective data.



⚠ **Preparations** as described on page 23.

1. Example

⚠ If an **F** appears in the display during programming, then the recorder has rejected the entered data (eg: 32.06. = non- existent date).

1.1 Select the first TIMER position. To do that, press numbered button **1**, then button **TIMER**.
– **PROG** and **T 1** (= TIMER position 1) are flashing.

1.2 To select longplay operation (if desired), press button **LP**.
– Additional indication: ***LP***.

⚠ From now on, confirm all entries with the **TIMER** button.

1.3 What do you wish to record?

1.3.1 TV programmes
To do that, select the desired TV programme (position) with the numbered buttons **1** ... **0** and confirm the entry.

1.3.2 Satellite programmes
To do that, select the desired Satellite programme with the numbered buttons **1** ... **0**, press button **SAT**, and confirm.

⚠ An appropriate GRUNDIG Satellite receiver must be connected to the socket ⊖ **EURO-AV** ⊖ and to the **Universal** socket on the back of the recorder.

1.3.3 Radio programmes
To do that, press button **Hi-Fi** (indication HI) and confirm.
– For sound recordings, no programme position must be selected.

⚠ A stereo system must be connected to the sockets **AUDIO R** ⊖ **L** on the back of the recorder.

– After having selected the programme, ***DATE*** is flashing and the current date is indicated.

Further recording possibilities and the required entries for these are to be found at the end of this chapter, points **1.1.4** to **1.1.7**.

1.4 When do you wish to record?

1.4.1 Confirm **today's date** (for recordings to be made the same day), **or**

1.4.2 enter the **desired date** (for recordings to be made at later dates) as **four figures** (day and month) using the numbered buttons **1** ... **0** and confirm, **or**

1.4.3 **for "daily" recordings at the same time** press button **0** instead of entering the date and confirm, **or**

1.4.4 **for "weekly" recordings at the same time** enter the day of the date as **two figures** with the numbered buttons **1** ... **0**, press the numbered button **0 two times** instead of entering the month, and confirm.
– ***START*** is flashing.

1.5 Enter the **Start time** as **four figures** with the numbered buttons **1** ... **0** and confirm.
– ***VPS*** is flashing (not on hifi sound recordings).

1.6 Confirm **VPS or** clear it with numbered button **0**.
– ***STOP*** is flashing.

1.7 Enter the **Stop time** as **four figures** with the numbered buttons **1** ... **0** and confirm.

- **REST** in the display of the recorder indicates the remaining playing time of the tape.
- If the sum of all recording times is greater than the **total playing time** of the used cassette, then recording will take place until the tape end is reached, the recorder automatically switches to fast rewind and, when the beginning of the tape is reached, to Stop.

⚠ If, instead of **REST** the message ...
... **FULL** appears in the display, a cassette with insufficient playing time has been inserted;
... --:-- appears, the total playing time has not been recognized with a non-standard cassette;
... **CASS** appears, check the erase prevention of the cassette or insert a cassette.
- The colour test pattern is visible on the TV screen; **Automatik** (with red background) indicates the recording standby mode of the recorder.
- The TIMER recording will automatically be started and stopped at the programmed times. From now on, the drive mechanism buttons are blocked.

Programming recordings is also possible with external units

Examples:

1.1.4 AV = Connect a picture/sound source to socket →⊙ **EURO-AV** ⊙→.
Press button **AV/CV** to select the programme source.

1.1.5 CV = Connect a picture/sound source to the sockets **AUDIO IN** and **VIDEO IN**.
Press button **AV/CV two times** to select the programme source.

1.1.6 S 1 = Connect a picture/sound source to the sockets **S-VHS IN** and **AUDIO IN**.
Press numbered button **1** and then button **S-VHS** to select the programme source.

1.1.7 S 2 = Connect a picture/sound source to the sockets **S-VHS** →⊙ and **AUDIO R** →⊙ **L** on the back of the recorder.
Press numbered button **2** and then button **S-VHS** to select the programme source.

2. Programming the next and further TIMER positions

2.1 Press a numbered button **2...8** and then the **TIMER** button.
- **PROG** and **T 2...8** are flashing; the indication of the occupied TIMER position is illuminated.

2.2 Enter the data of the desired television broadcast as described for TIMER position 1.

⚠ If **COLL** and **two flashing TIMER** indications briefly appear in the display, the switching-on and -off times of **these two** TIMER positions are overlapping each other.
Select the TIMER positions with the respective numbered buttons **1 ... 8** and button **TIMER** and correct the TIMER times.

3. Changing individual data of a TIMER position

3.1 Select the TIMER position concerned by pressing the respective numbered button **1 ... 8** and then the **TIMER** button.
- The data to be changed are visible in the display; the indication **T 1 ... T 8** is flashing.

3.2 Repeatedly press the **TIMER** button until the data field to be changed is flashing.

3.3 Enter the new data with the numbered buttons **1 ... 0** and confirm with the **TIMER** button.
- The recorder is again in the recording standby mode and the TIMER recording will be started and stopped at the programmed times.

4. Clearing an occupied TIMER position

4.1 Select the TIMER position concerned by pressing the respective numbered button **1 ... 8** and then the **TIMER** button.
- The data of the TIMER position are visible in the display; the indication **T 1 ... T 8** is flashing.

4.2 Press the **TIMER** button once again.
- **PROG** is flashing.

4.3 Clear the TIMER position by pressing the numbered button **0** and then the **TIMER** button.
- The TIMER position is cleared and can be programmed again.

5. Checking programmed TIMER positions

5.1 Select the TIMER position concerned by pressing the respective numbered button **1 ... 8** and then the **TIMER** button.
- The data of the TIMER position are visible in the display; the indication **T 1 ... T 8** is flashing.

6. Interrupting the recording standby mode

If you wish to use the recorder when it is in the recording standby mode, eg: for playback, proceed as follows:

6.1 Press button **CASS ⏏**: The cassette is automatically ejected.

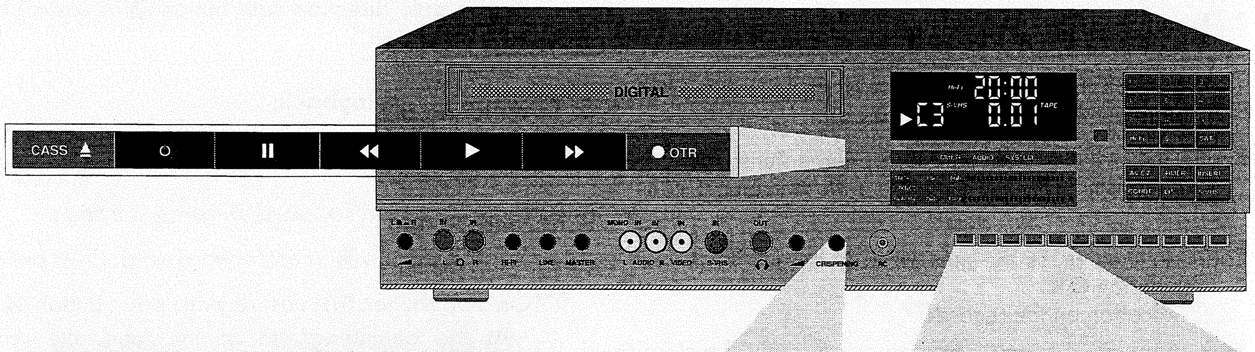
⚠ The recording standby mode of the recorder now is **interrupted**.

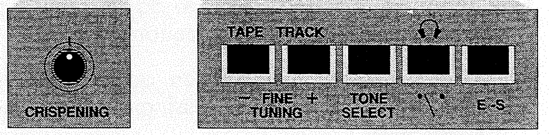
6.2 Select the desired function.

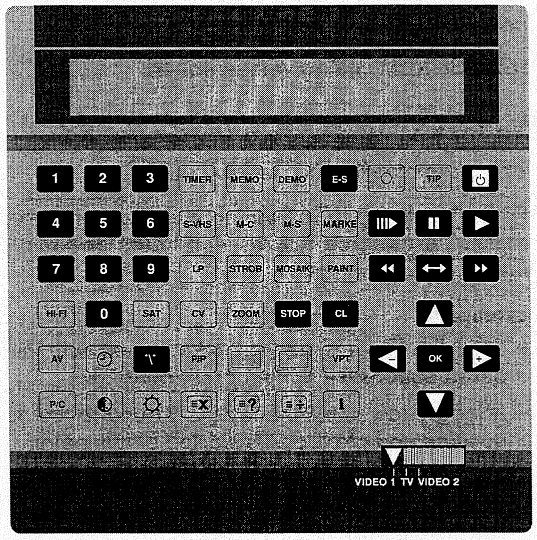
6.3 When the function is terminated, again insert a cassette with sufficient playing time and confirm the **flashing TIMER** indication by pressing the respective numbered button **1 ... 8** and then the **TIMER** button.
- The recorder is again in the recording standby mode (**Automatik**) and the TIMER recordings will be made at the programmed times.

Playback

The following buttons and controls will be required


CASS ▲
○
II
◀◀
▶
▶▶
● OTR
DIGITAL
HiFi
S-VHS
20:00
▶C3
0.01
TAPE
CRISPENING


CRISPENING
TAPE TRACK
– FINE +
TUNING
TONE
SELECT
'\'
E-S


1
2
3
TIMER
MEMO
DEMO
E-S
TIP
4
5
6
S-VHS
M-C
M-S
MARKE
7
8
9
LP
STROB
MOSAIK
PAINT
HI-FI
0
SAT
CV
ZOOM
STOP
CL
AV
'\'
PIP
VPT
OK
P/C
VIDEO 1 TV VIDEO 2

Preparations:

1. Switch on TV receiver.
2. Select the AV programme position for video playback on the TV receiver.
3. Insert a recorded cassette.
   - The recorder automatically recognizes whether S-VHS or standard VHS cassettes are used, and whether standard or longplay recording mode has been selected.

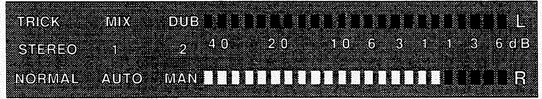
1. Starting playback

1.1 Press button ▶ .
– Indication on the recorder, eg:

▶ = Playback symbol
HiFi = Stereo playback
S-VHS = Playback of an S-VHS recording
20:00 = Clock time
C3 = Total playing time of cassette
0.01 = Elapsed playing time of cassette

⚠ When the tape end is reached, the recorder automatically switches to rewind and switches to stop when the beginning of the tape is reached.

1.2 With the keys ◀ and ▶ **of the remote control or** the keys **– TAPE TRACK + on the recorder** you can optimize the picture/sound quality.
The more vertical lines light up in the tone display (right channel) of the recorder, the better the playback quality.


TRICK
MIX
DUB
L
STEREO
1
2
40
20
10
6
3
1
1
3
6 dB
NORMAL
AUTO
MAN
R

1.3 Adjusting the picture sharpness (Crispening) (only possible on the recorder)
By pressing the button the **CRISPENING** control will be unlocked.
Adjust the picture sharpness to suit your taste.

⚠ If, when playing back "cassettes recorded on other machines" the picture "jumps" or "scrolls", press the numbered buttons **8 5 1 1** and then button **OK**.

2. Selecting the sound track

When playing back **stereo** or **two-channel broadcasts**, you can select the desired sound track with button **'\' of the remote control** or button **TONE SELECT on the recorder**.

2.1 Basic position = Stereo (indication ***STEREO***);

2.2 Press button '\' or button **TONE SELECT** 1x = sound track 1 (indication ***1***);

2.3 Press button '\' or button **TONE SELECT** 2x = sound track 2 (indication ***2***);

2.4 Press button '\' or button **TONE SELECT** 3x = Mono/longitudinal track (indication ***NORMAL***);

2.5 Press button '\' or button **TONE SELECT** 4x = basic position (indication ***STEREO***).

3. Pause/Still Picture

3.1 During playback, press button **II** .

3.2 Repeatedly pressing advances the still picture step by step.
- The duration of the still picture is time limited. After the timeout the recorder switches off.

3.3 If the still picture "trembles" or appears "unsteady", it can be optimized (only possible with the remote control).

3.3.1 To do that, press the numbered buttons **8 5 2 8** and then button **OK**.
- Indication on the recorder: A 1.

3.3.2 Then use buttons ▼ or ▲ to adjust the still picture to suit your taste, then press button **OK**.

3.4 With "cassettes recorded on another machine" optimize the still picture by pressing a longer time the buttons ◀ or ▶.

3.5 To continue playback, press button ▶.

4. Digital still picture

(only possible with the remote control)

4.1 During playback, press button **STOP** .
- A still picture appears on the screen, playback continue to "run", but is not visible.

4.2 To continue playback, press button **CL**.

5. Slow motion (only possible with the remote control)

5.1 During playback, press button **III▶**.
- On longplay mode, slow motion is not possible.

5.2 If the slow motion picture "trembles" or appears "unsteady", it can be optimized.

5.2.1 To do that, press numbered buttons **8 5 2 8** and then button **OK**.
- Indication on recorder: A 1.

5.2.2 Use the buttons ▼ or ▲ to adjust the slow motion picture to suit your taste, then press button **OK**.

6. Picture search

For "paging" recordings with higher playback speed.

6.1 Forward: Press button ▶ and then button ▶▷, once = 5 - fold, twice = 7 - fold.

6.2 Reverse: Press button ▶ and then button ◁◀, once = 5 - fold, twice = 7 - fold.
- The sound is automatically muted.
- The duration of the picture search is time limited; after the timeout, the recorder switches off.

6.3 Terminate picture search with button ▶.

7. Multispeed (only possible with the remote control)

7.1 It is possible to change the playback speed in forward and reverse direction with button ▲ (= faster) or button ▼ (= slower).

8. Terminating playback

8.1 Press button ⏻.

9. Rewinding and forward winding the tape

9.1 On Stop (button ⏻) : Fast forward wind: Press button ▶▷.

9.2 On Stop (button ⏻) : Fast rewind: press button ◁◀.
- At the beginning/end of the tape, the recorder switches off.

9.3 Terminate fast winding with button ⏻.

10. Go-To (fast winding to a certain position)

(only possible with the remote control)

10.1 Enter the desired Go-To time with the numbered buttons **1 ... 0 as three figures** – in hours and minutes –, then press button ⟷.

Example:

- Enter the Go-To time (eg: 48 minutes) with the numbered buttons **0 4 8**, then press button ⟷.
- After the last entry, the tape is wound to the desired position and playback is started at this point.

11. Automatic Programme Finder (APF-System)

This facility enables you to find precisely and quickly the beginning of any own recording.

For this – at the beginning of each **own recording** – **"marks"** will automatically be recorded on the tape.

The marks are always related to the **beginning of the tape**.

Example:

11.1 The tape is wound to the beginning and you wish to see the fifth recording: Press the numbered button **5** and then button ▶▷.
- The tape will automatically be wound to the beginning of the fifth recording and playback is started at this point.

11.2 If you **then** wish to see the third recording, counted from the **beginning of the tape**, you must skip 2 recordings. To do that, press the numbered button **2** and then button ◁◀.
- The tape will automatically be wound to the beginning of the third recording and playback is started at this point.

12. Edit Search

With this function, the recorder will search electronically marked tape positions.

12.1 Press button **E-S**.
- The recorder switches to **rewind**, searches the **next** electronic mark, and then switches to playback–pause.

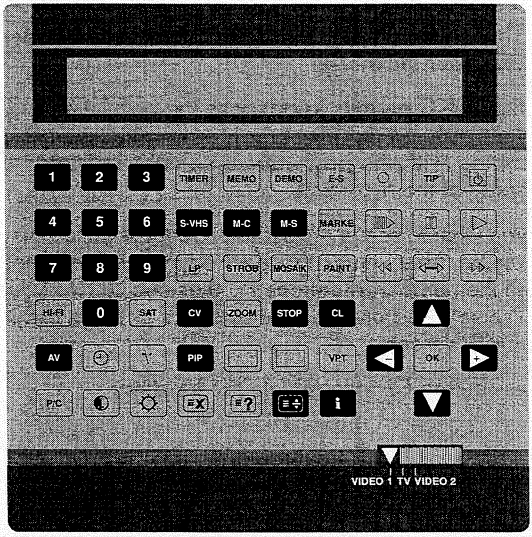
The Digital Picture-in-Picture Functions

Picture-in-Picture mode is possible during the recorder functions "Playback" and "EE-Mode" (looping-through operation).

On "EE-mode", broadcasts or playback from other recorders or camera recorders are "transported" through your recorder and shown on the picture screen of the TV set.

⚠ Select the programme position for video playback on the TV set.

The following buttons will be required



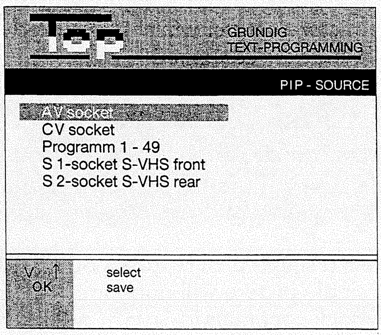
1. Inserting a small picture with preselection of the small-picture source

With the picture-in-picture function, a small picture is inserted into the TV picture. You can select the source from which this small picture is delivered.

1.1 Select the **Info** page with button **i**.

1.2 With the numbered button **4** select the line **Special Functions** in the page **Info**.

1.3 With the numbered button **2** select the line **PIP-SOURCE** in the page **Special Functions**.
   - The page **PIP-SOURCE** appears, the first line is marked by a blue background.



PIP - SOURCE

AV socket
CV socket
Programm 1 - 49
S 1-socket S-VHS front
S 2-socket S-VHS rear

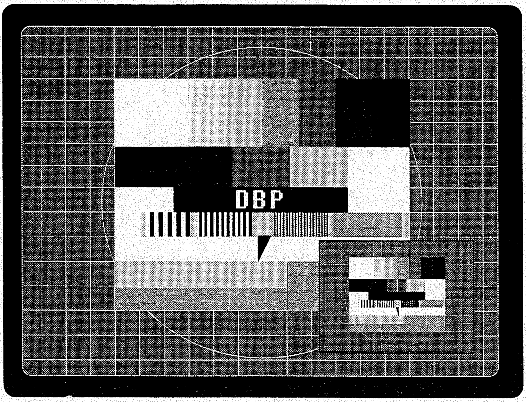
▼ ▲ select
OK save

1.4 With the buttons ▼ or ▲ select the desired small-picture source and store it with button **OK** into memory.
   - The selected small-picture source appears in "green", the recorder switches **automatically** to TV picture.

⚠ To see the picture of the selected unit (source), this unit must be connected to the respective socket.

⚠ If **Programme 1 – 49** of the recorder has been selected as small-picture source, the small and large pictures have the same size in the "EE-mode".

1.5 To insert the small picture, press button **PIP**.



2. Inserting a small picture by direct selection

2.1 First select the small-picture source:
   - With the numbered buttons **1**...**0**, select the different programme positions of the recorder;
   - with button **AV** select the unit connected to socket **⊕ EURO-AV ⊕**;
   - with button **CV** select the unit connected to the sockets **VIDEO IN** und **AUDIO IN**;
   - with numbered button **1** and button **S-VHS**, select the unit connected to the sockets **S-VHS IN** and **AUDIO IN**;
   - with numbered button **2** and button **S-VHS**, select the unit connected to the sockets **S-VHS ⊕** and **AUDIO R ⊕ L**.

2.2 To insert the small picture, press button **PIP**.

3. "Changing" the small and large picture

3.1 Press button ⊞.
   - The small picture becomes the large one, and vice versa.

4. "Frozen" Picture-in-Picture (still picture)

4.1 Press button **STOP**.

4.2 To cancel the function, press button **STOP** once again.

5. Moving the small picture on the TV screen

5.1 With the buttons ▲, ▼, ◀ and ▶, the small picture can be moved and positioned as desired on the TV screen.

6. Terminating the small-picture functions

6.1 Press button **CL**.

The Digital Picture-in-Picture Functions

7. Inserting nine small pictures (Multi-Scene)

7.1 Press button **M-S**.
- You will see **nine** small pictures of the same programme, **eight** of them time-shifted as still pictures, whereas the **small picture in the centre** shows the current programme.

7.2 Each pressure on the button **M-S** updates the **eight outer** still pictures.

7.3 By pressing button **STOP**, the "animated" small picture is "frozen", the next small picture shows the current programme. Repeatedly pressing button **STOP** advances this sequence to the next small pictures.

7.4 Press button **CL** to terminate this function.

8. Inserting nine programmes (Multi-Channel)

Only possible in the "EE-mode".

8.1 Press button **M-C**.
- **Nine different** programmes with the associated station abbreviations will be inserted on the TV screen.

⚠ If a programme position is not occupied by a TV station, or if the TV station is not broadcasting, this programme position will not appear as small picture, and a ⊜ **?** will be shown instead of the station abbreviation.

- The small pictures will be updated in short intervalls one after the other.

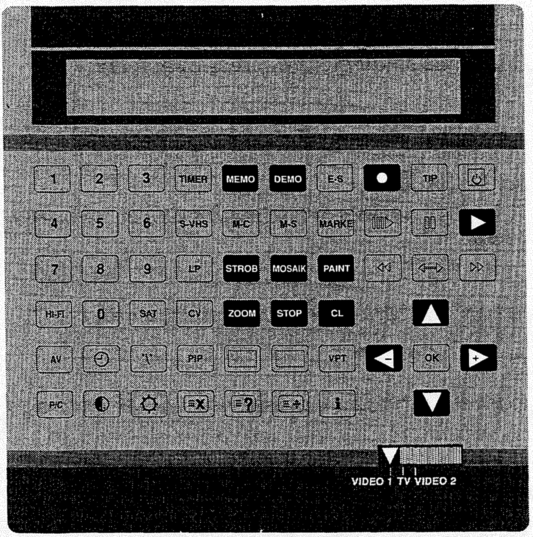
8.2 Button **M-C** permits to advance the programmes of the small pictures **in blocks** of nine programmes each (starting with the programme number indicated in the display of the recorder).

8.3 If you wish to select **a certain** broadcast out of this programme offer, enter the desired programme position with the numbered buttons **1 ... 0 as one** or **two figures**.
- The selected programme appears as large picture on the TV screen.

8.4 Press button **CL** to terminate the function.

The Digital Picture Functions

The following buttons will be required



1. Storing into memory and recalling a single picture of a video recording

1.1 Insert a recorded cassette.

1.2 Switch on TV receiver and select the programme position for video playback.

1.3 Start playback by pressing button ▶.

1.4 Press button **MEMO** to store the desired single picture.
- The single picture will remain visible for a short time on the picture screen whilst it is stored into memory, then playback is continued.

⚠ The single picture will remain stored until you
... store another single picture;
... select another digital picture function;
... select a Picture-in-Picture function;
... press button ⏻.

1.5 To select a single picture, press button **DEMO** .
- The single picture will appear on the TV screen.
- Playback continues to "run" (**not visible** on the TV screen), the sound can further be heard.

1.6 To switch back to playback, press button **CL**.

The Digital Picture Functions

2. Storing and recalling a single picture of a television broadcast

2.1 Switch on TV receiver and select the programme position for video playback.

2.2 Switch on recorder and select the desired programme on the recorder.
- The selected programme now is visible on the TV receiver (EE-mode).

2.3 Store the desired single picture of the TV broadcast (eg: the winning Lotto numbers) by pressing button **MEMO**.
- The single picture remains visible for a short time on the TV screen whilst it is stored, then the recorder switches back to the TV picture.

> ⚠ The single picture remains stored until you
> ... store a new single picture;
> ... select another digital picture function;
> ... select a Picture-in-Picture function;
> ... press button ⏻.

2.4 To recall a single picture, press button **DEMO** .
- The single picture appears on the TV screen.
- The TV broadcast continues to "run" (**not visible** on the TV screen), the sound can further be heard.

2.5 To switch back to the television broadcast, press button **CL**.

3. Digital still picture

3.1 Press button **STOP**; the picture is "frozen".

3.2 To terminate the still-picture function, press button **CL**.

4. Paint-Effect

The Paint-Effect colours and shades the colour picture.

4.1 To switch on the Paint-Effect, press button **PAINT**.

4.2 To switch off the Paint-Effect, press button **CL**.

5. Mosaic-Effect

The Mosaic-Effect decomposes the picture into raster points.

5.1 To switch on the Mosaic-Effect, press button **MOSAIK**.

5.2 Button ▶ increases the Mosaic-Effect; the raster points become larger.

5.3 Button ◀ decreases the Mosaic-Effect; the raster points become smaller.

5.4 To terminate the Mosaic-Function, press button **CL**.

6. Stroboscopic-Effect

This effect makes the movements to appear jerky and broken.

6.1 To select the stroboscopic effect, press button **STROB**.

6.2 Button ▶ increases the speed of the picture sequence.

6.3 Button ◀ decreases the speed of the picture sequence.

6.4 To terminate the stroboscopic effect, press button **CL**.

> ⚠ The Paint- and Mosaic-Effects can also be selected during the function "Digital Still Picture".
>
> ⚠ Paint-/Mosaic-/Stroboscopic effects can be mixed with each other.

7. Zoom-Effect

With this function, certain picture details can be selected and then enlarged (max. 16 times).

7.1 Use button **STOP** to "freeze" the picture.

7.2 Press button **ZOOM**.
- A frame appears on the TV screen.

7.3 With the buttons ▲, ▼, ◀ and ▶, move the frame across the picture.

7.4 When you have marked the desired picture detail, repeatedly press button **ZOOM** until the desired enlargement is obtained (max. 16 times).

7.5 To terminate the Zoom function, press button **CL**.

8. Recording the digital picture functions ... ... with your recorder

8.1 Insert a cassette; observe the erase prevention.

8.2 Select the desired TV programme with the numbered buttons **1** ... **0** or another programme source (eg: Satellite receiver, camera recorder, etc.) with the respective buttons.

> ⚠ On the selected programme position/-source, **always** a picture-/sound signal must be applied.

8.3 For selecting the digital picture functions, see points **1** to **7** on pages 33, 34, or points **3** to **7** on this page.

8.4 To start recording, press button ● a longer time.
- The picture can be changed already during recording.

Exception: "Changing" the small and large picture (point 3, page 33), is only possible during recording–pause.

8.5 To terminate recording, press button ⏻.

9. Recording the digital picture functions ... ... with another recorder

9.1 Connect the second recorder to socket →○ **EURO-AV** ○→.

9.2 Insert a cassette into the second recorder; observe erase prevention.

9.3 On the recorder, enter the code number **8 5 4 7** with the numbered buttons **1** ... **0** and confirm with button **OK**.

9.4 Insert a recorded cassette into your recorder and start playback with button ▶, **or**

select the desired TV programme with the numbered buttons **1** ... **0**.

9.5 To select the digital picture functions, see points **1** to **7** on pages 33, 34, or points **3** to **7** on this page.

9.6 Start recording on the second recorder.
- The picture can already be changed during recording.

Exception: "Changing" the small and large picture (point 3, page 33), is only possible during recording–pause.

9.7 Terminate recording on the second recorder.

9.8 After recording, enter the code number **8 5 4 6** with the numbered buttons **1** ... **0** and confirm with button **OK**.

Creating Title Pages

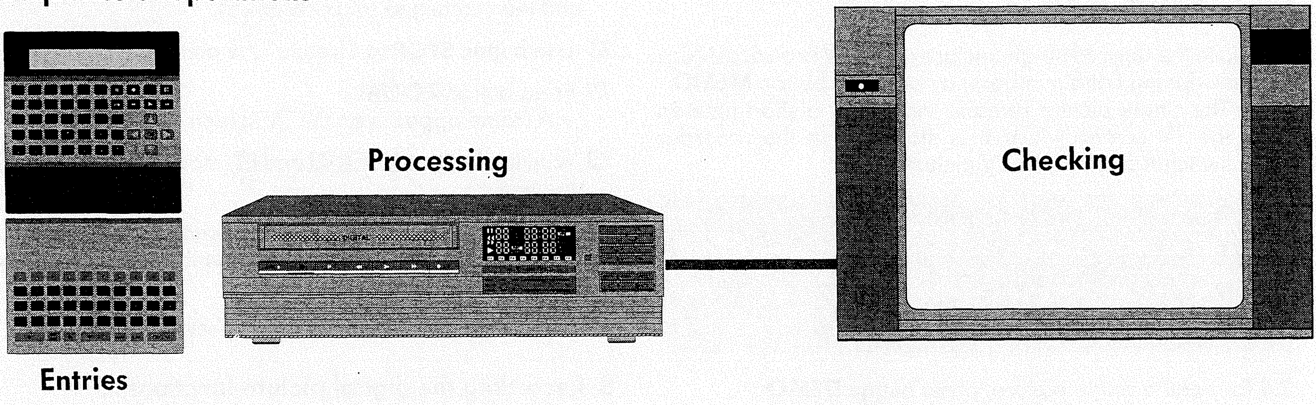
With the remote control and this recorder, you can create your own "title pages".

These title pages then can be used, for example, when editing your holiday films recorded with a camera recorder.

You can create and store three "title pages" and record these at any desired position on your "holiday cassette".

⚠ **Important Hint**
The stored title pages will be erased by
- programming recordings with the Teletext pages;
- the Teletext operation;
- switching off the recorder with button ⏻.

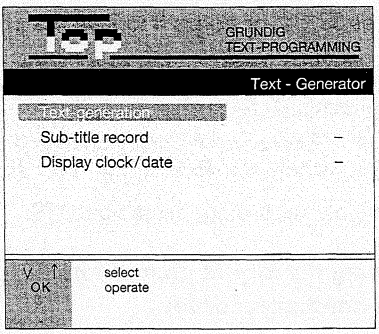
Sequence of operations



1. Selecting a text page

1.1 Select page **Info** with button **i**.

1.2 Select the line **Text-Generator** with the numbered button **3** in the page **Info**.
- The page **Text-Generator** appears; the line **Text-generation** is marked by a blue background.



Top GRUNDIG TEXT-PROGRAMMING

Text - Generator

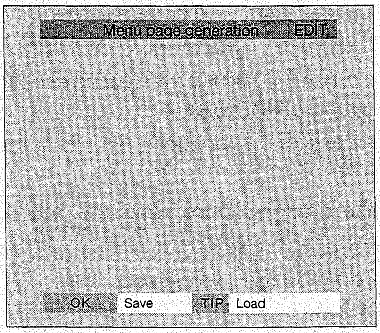
Text-generation

Sub-title record –

Display clock/date –

V ↑ OK select operate

1.3 Activate the function with button **OK**.
- The page **Menu page generation** appears.



Menu page generation EDIT

OK Save TIP Load

- **EDIT** in the upper info-line indicates, that the unit is ready for text/character entries.

⚠ Open up the remote control handset.

2. Selecting the background colour

2.1 Select the background colour for **one line** with one of the **colour buttons**
BLACK
RED
GREEN
YELLOW
BLUE
MAGENTA
CYAN
WHITE
then press button **BACK GROUND**.
- The **first line** appears in the selected colour.
- The cursor appears **automatically** in the **contrast colour**

or

2.2 select the background colour for the **complete page** (downwards from the cursor position on) with the above mentioned **colour** buttons, then press button **SHIFT**, and then button **BACK GROUND**.
- The **complete page** appears in the selected colour.
- The cursor appears **automatically** in a **contrast colour**.

2.3 If you wish to change the background colour of the page **or** of the next lines, then repeat the entries of point **2.1** or **2.2**.
- The "new" colour appears for a line or, downwards from the cursor on, for the complete page. The "old" background will be covered by the "new" background.
- If no colour is selected, the background will appear in black, the text and graphics to be entered in white.

3. Selecting the colour of the letters/characters

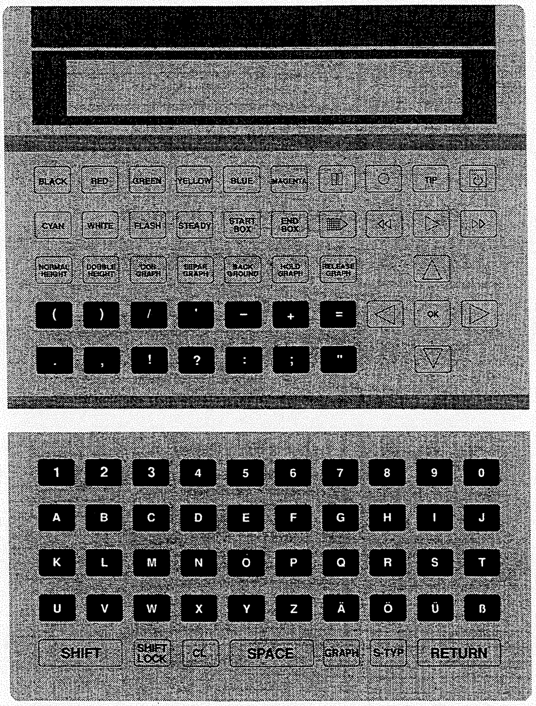
3.1 Select the colour of the letters/characters with the **colour** buttons (see point **2.1**).
– The cursor appears in the selected colour.

4. Fixing the writing position

4.1 Using the buttons ▲, ▼, ◀ and ▶, fix the cursor position on the picture screen.

5. Text entry

5.1 Enter the text with the following buttons.


BLACK
RED
GREEN
YELLOW
BLUE
MAGENTA
TIP
CYAN
WHITE
FLASH
STEADY
START BOX
END BOX
NORMAL HEIGHT
DOUBLE HEIGHT
CONC GRAPH
SEPAR GRAPH
BACK GROUND
HOLD GRAPH
RELEASE GRAPH
OK
SHIFT
SHIFT LOCK
CL
SPACE
GRAPH
S-TYP
RETURN

– Per **line**, it is possible to enter **36 characters**;
– per **page**, it is possible to enter **23 lines**.

⚠ Text and graphics characters can be mixed at random.

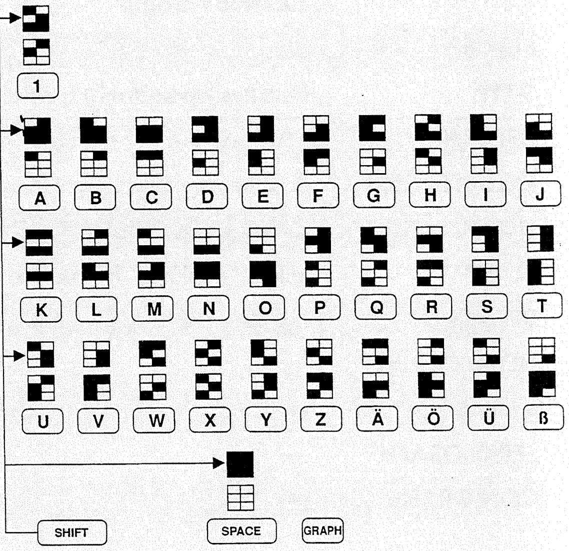
⚠ It is not possible to enter a character in the first two places of each line.
It is not possible to enter dot graphics characters in the first four places of each line.

⚠ It is possible to change the colours of the letters/characters (see point **3** on this page).
For the background of a line, only one colour can be used.
If several colours are selected for the letters/characters of one line, a "blank" will be inserted by the system between the letters of different colours. It is therefore recommended, to change the colour only with complete words.

⚠ If you have entered text/graphics characters in a certain colour and you change the background into the same colour, the text/graphics characters will become "invisible".

6. Graphics entry

6.1 Use button **GRAPH** (Graphics) to switch over the buttons of the remote control to graphics characters entry.
– During graphics operation, GPH will light up in the display of the remote control.
– The illustration shows the buttons with the possible entries. For the characters of the upper row, first press the button **SHIFT**.

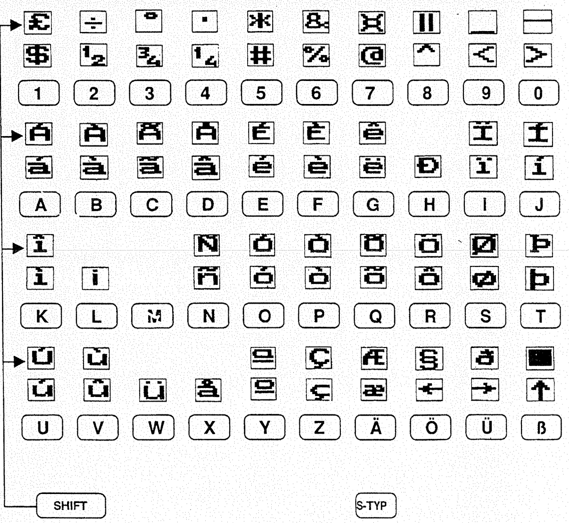

1
A B C D E F G H I J
K L M N O P Q R S T
U V W X Y Z Ä Ö Ü ß
SHIFT
SPACE
GRAPH

⚠ After having entered a graphics character, the cursor does **not** automatically jump to the next position. Move it with the buttons ▶, ◀, ▲ or ▼ to the desired position.

6.2 To switch back to text entry, press button **GRAPH** once again.

7. Entering special characters

7.1 Press button **S-TYP** to switch over the buttons of the remote control for the entry of special characters (each time for one character).
– The display of the remote control shows: S-t.
S-t goes out after each entry.
– The illustration shows the buttons when switched over for special characters. For the characters of the upper row you must first press button **SHIFT**.


1 2 3 4 5 6 7 8 9 0
A B C D E F G H I J
K L M N O P Q R S T
U V W X Y Z Ä Ö Ü ß
SHIFT
S-TYP

8. Additional functions / Variants

Button	Function for text entries	Function for graphics entries
SHIFT	next letter upper case	next character negative
SHIFT LOCK	all following letters upper case	all following characters negative
CL	erases one letter at the cursor position	erases one charcater at the cursor position
S-TYP and $\boxed{(}$	erases all letters from the cursor to the right	erases all characters from the cursor to the right
SPACE	one blank	one blank
S-TYP	switches keyboard to special characters	
RETURN	new, next line	new, next line
DOUBLE HEIGHT	doubles the letter height in one line	doubles the character height in one line
NORMAL HEIGHT	releases "DOUBLE HEIGHT"-function	
FLASH	letters "flashing" from cursor position on	characters "flashing" from cursor position on
STEADY	releases "FLASH" function	
HOLD GRAPH	—	repeats the last entered character
RELEASE GRAPH	—	releases "HOLD GRAPH"-function
SEPAR GRAPH	—	switches to "dot graphics"
CON GRAPH	—	switches to "block graphics"

9. Control sequencies

Button	Function
S-Typ and $\boxed{(}$	erases one line from cursor position on to the right
S-Typ and $\boxed{)}$	erases one complete line; the text closes up
S-Typ and $\boxed{?}$	erases one text page
S-Typ and $\boxed{.}$	inserts one line; the text is shifted
CL	erases the character marked by the cursor
S-Typ and $\boxed{+}$	cursor jumps into first line
S-Typ and $\boxed{;}$	cursor jumps into last line
S-Typ and $\boxed{-}$	cursor jumps to beginning of line
S-Typ and $\boxed{=}$	cursor jumps to end of line

10. Storing Text / Graphics

10.1 When having created a page, this will be stored. To do that, press button **OK**.

10.2 Select a memory position by pressing one of the numbered buttons **1 ... 3**.
– The selected memory page will be indicated in the "upper" Info line.

10.3 Store the title page with button **OK**.
– The title page is stored into the selected memory position.
– The page **Menu page generation** appears with free space for further entries.

⚠ **Important Hint**
The stored title pages will be erased by
- programming recordings using the Teletext pages;
- Teletext operation;
- switching off the recorder with button ⏻.

⚠ By pressing the numbered button **0** the editing page is selected again; it is **not** stored into memory.

11. Selecting a stored title page

11.1 Press button **TIP**, then select the desired title page with the numbered buttons **1 ... 3**.
– The page appears with the page number shown in the "upper" Info line.

11.2 Press button **TIP** again: The selected page will be "loaded" into the editing page and can be modified. After modification, store the page again as described in point **10**.

12. Recording a title page onto tape

12.1 Quit title page by pressing button **i** **two times**.

12.2 Insert a cassette, select playback, and search the tape position, where the title page is to be inserted.

12.3 When you have found this position, press button **II** (Playback – Pause), then press button ● and once again button **II** (Recording – Pause).

12.4 To select a stored title page press numbered buttons **1**, **2** or **3** and then button **TIP**.
– The title page appears on the TV screen.

12.5 Start recording by pressing button ● **a longer time**.
– The title page is recorded onto the tape, the "old" recording will be erased.

12.6 By pressing button **TIP** the recorder is switched to Recording – Pause; it is possible to record the next title pages (see points **12.3** and **12.4**).

12.7 To terminate recording, press button ⏻ **only once**.

Creating Text/Graphics Boxes

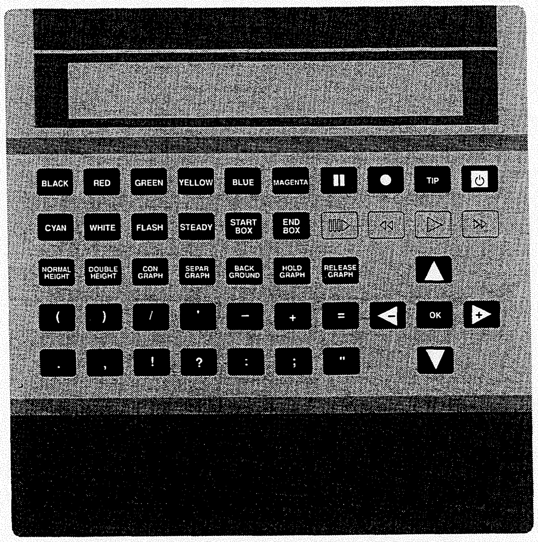
It is possible to insert into existing recordings - eg: your holiday film - text or graphics **at a later date**. The existing scenes of the film will not be erased.

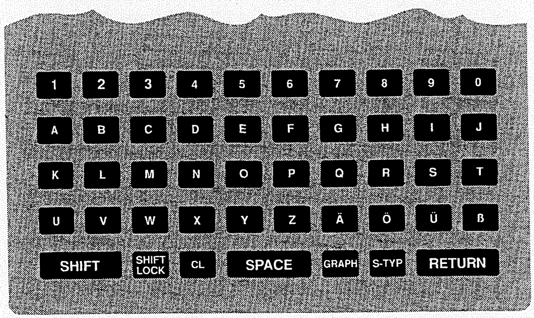
The holiday film will be recorded from another recorder or camera recorder onto your recorder; the text or graphic boxes then can be created with the remote control and this recorder.

Following that, both signals will be recorded together.

⚠ The stored Text/Graphics boxes will be erased by
- programming recordings using the Teletext pages;
- Teletext operation;
- switching off the recorder with button ⏻

The following buttons will be required





Preparations:

1. Connect the second video recorder to socket ⊖ **EURO-AV** ⊖ **or** a camera recorder to the sockets **VIDEO IN** and **AUDIO IN**.
2. Insert an empty cassette into your recorder and a recorded cassette, into which the Text/Graphics box is to be inserted, into the second recorder or camera recorder.
3. Start playback on the second video recorder or on the camera recorder.
4. Slide the switch on the remote control into position **VIDEO 1**.

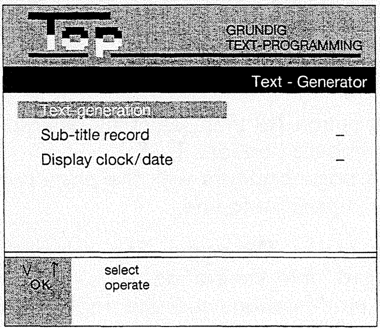
5.1 Select the programme position of the picture/sound source:
Press button **AV** and then button ◪ if the picture/sound source is connected to socket ⊖ **EURO-AV** ⊖, **or**

5.2 press button **CV** and then button ◪ if the picture/sound source is connected to the sockets **AUDIO IN** and **VIDEO IN**.

1. Creating Text/Graphics Boxes

1.1 Select page **Info** with button **i**.

1.2 Using the numbered button **3**, select the line **Text-Generator** in the page **Info**.
– The page **Text-Generator** appears, line **Text-Generation** is marked by a blue background.



TOP GRUNDIG TEXT-PROGRAMMING

Text - Generator

Text-generation
Sub-title record –
Display clock/date –

V ↑ select
OK operate

1.3 Activate the function with button **OK**.
– The page **Menu page generation** appears, **EDIT** in the upper Info-line indicates the readiness for creating Text/Graphics boxes.
– The cursor must be positioned in the upper left corner.

1.4 Press button **START-BOX**.
– An additional picture, delivered from the second recorder or the camera recorder, will appear on the TV screen.

2. Selecting the background colour of the Text/Graphics box

2.1 Select the background colour for **one line** with one of the **colour** buttons **BLACK,**
RED,
GREEN,
YELLOW,
BLUE,
MAGENTA,
CYAN,
WHITE
then press button **BACK GROUND**.
– The **first line** appears in the selected colour.
– The cursor **automatically** appears in the **contrast colour**

or

2.2 Select the background colour for the **complete** Text/Graphics box (from the cursor position downwards) with the **colour** buttons, then press button **SHIFT** and then button **BACK GROUND**.

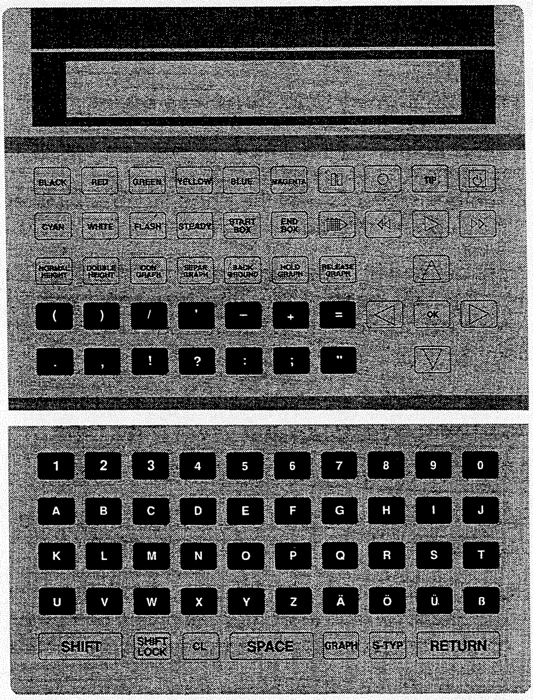
- If you wish to change the background colour for the next or after several lines, then repeat the entries of point **2.1** or **2.2**.
- The new colour will appear line by line or from the cursor position on downwards. The "old" background will be covered by the "new" one.
- If no colour is selected, the background will appear black, the entered text and graphics white.

3. Selecting the colour of the letters/characters

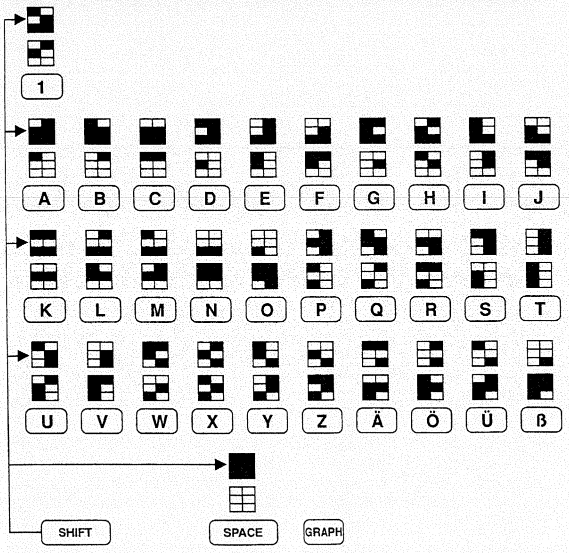
3.1 Select the colour of the letters/characters with the **colour** buttons (see point **2.1**).
- The cursor will appear in the selected colour.

4. Entering Text/Graphics

4.1 Enter the desired text with the following buttons.


BLACK
RED
GREEN
YELLOW
BLUE
MAGENTA
CYAN
WHITE
FLASH
STEADY
START BOX
END BOX
NORMAL HEIGHT
DOUBLE HEIGHT
CON GRAPH
SEPAR GRAPH
BACK GROUND
HOLD GRAPH
RELEASE GRAPH
OK
SHIFT
SHIFT LOCK
CL
SPACE
GRAPH
S-TYP
RETURN

4.2 Press button **GRAPH** to switch over the buttons of the remote control for graphics characters.
- The display of the remote control will show GPH.
- The illustration shows the buttons with their entry possibilities. For the characters of the upper row, first press button **SHIFT**.

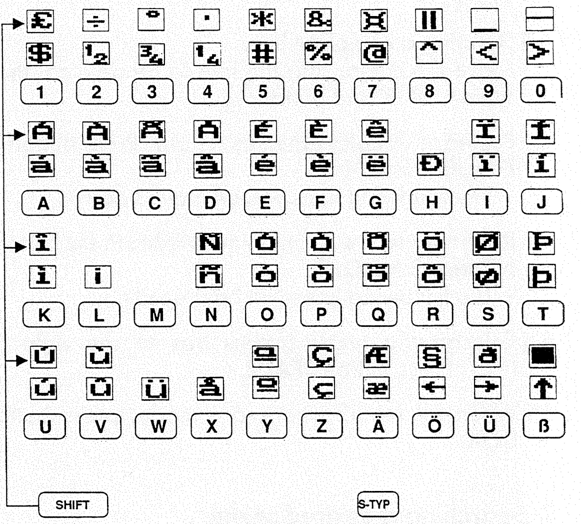

1
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U
V
W
X
Y
Z
Ä
Ö
Ü
ß
SHIFT
SPACE
GRAPH

⚠ After having entered a graphics character, the cursor does **not** automatically jump to the next position. Move the cursor with the buttons ▶, ◀, ▲ or ▼ to the desired position.

4.3 To switch back to text entry, press button **GRAPH** once again.

5. Entering special characters

5.1 The keyboard can also be switched over to special characters by pressing button **S-TYP**.
- The display of the remote control will show: S-t. S-t goes out after each entry.
- The illustration shows the keys switched to special characters. For the characters of the upper row, first press button **SHIFT**.


1
2
3
4
5
6
7
8
9
0
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U
V
W
X
Y
Z
Ä
Ö
Ü
ß
SHIFT
S-TYP

⚠ If you wish that the text or graphics is displayed in **double height**, then press button **DOUBLE HEIGHT**.

⚠ It is possible to mix text and graphics characters as desired.

⚠ No entries are possible on the first two positions of each line.
It is not possible to enter dot graphics characters (SEPAR GRAPH) in the first four places of each line.

⚠ It is possible to change the colour of the text/graphics characters (see point **3** on this page).
The background of one line can be displayed in one colour only.
If you select several colours for the text/graphics characters, the system will insert a "blank" between the letters of different colour. It is therefore recommended to change the colour only word by word..

⚠ If you have entered the text/graphics characters in a certain colour and you change the colour of the background into the same colour, then the text/graphics characters will become "invisible".

Creating Text/Graphics Boxes

6. Additional functions/Variants

6.1 **Inserting Text/Graphics**: Move the cursor with the buttons ▷, ▽, ◁ and △ to the desired position and enter the "new" text or the "new" graphics character.
- The right-hand margin of the Text/Graphics box "adapts" itself automatically to the volume of the text or graphics.

6.2 **Deleting a text/graphics character**: Move the cursor to the desired position, then press button **CL**.
- The text/graphics character will be deleted.

6.3 **Inserting a line**: Move the cursor to the desired position where the line is to be inserted, then press buttons **S-TYP** and [.] (point).
- At the cursor position a new line will be inserted.

6.4 **Partially erasing a line** to the right of the cursor position. Move the cursor to the desired position from where the line is to be deleted, then press button **S-TYP** and button [(].

6.5 **Deleting a complete line.**
Move the cursor into the line to be deleted, then press button **S-TYP** and button [)].

6.6 **Posterior doubling the line height**: Press button **DOUBLE HEIGHT**.
- The following lines will be moved down.

6.7 **Returning to the normal line height**: Press button **NORMAL HEIGHT**.
- The following lines will be moved up.

6.8 **Enlarging a text/graphics box to the right** (without text): Press button **SPACE**.

6.9 When all modifications are made, press button **END BOX**.

7. Searching a desired scene

7.1 When the text/graphics box is completed, rewind the tape on the second video recorder or camera recorder, then switch to playback and search the position where you wish to insert the text/graphics box.

7.2 When having found this position, switch the second recorder or camera recorder to playback–pause (= freeze-frame).

8. Positioning the text/graphics box

8.1 With the buttons ▷, ◁, △ and ▽, move the text/graphics box into the desired position on the TV screen.

9. Storing a Text/ Graphics box

9.1 Press button **OK**.

9.2 Select the desired memory position by pressing one of the numbered buttons **1 ... 3**.
- The selected memory page will be indicated in the "upper" Info line.

9.3 Store the text/graphics box by pressing button **OK**.
- The text/graphics box will be stored into the selected memory position.

⚠ **Important Hint**
The stored text/graphics boxes will be erased by
- programming recordings using the Teletext pages;
- Teletext operation;
- switching off the recorder with button ⏻.

⚠ By pressing the numbered button **0** you return to the edit page; the page has **not** been stored.

10. Recalling stored Text/Graphics boxes

10.1 Press button **TIP**, then select the desired text/graphics box using the numbered buttons **1 ... 3**.
- The box appears with the page number inserted into the "upper" Info line.

10.2 Press button **TIP** once again to "load" the selected box into the edit page. There the box can be modified. After modification, store the box again as described in point **9**.

11. Recording a text/graphics box onto tape

11.1 Exit the edit page by pressing button **i twice**.

11.2 Select the desired box by pressing one of the numbered buttons **1 ... 3**, then press button **TIP**.

11.3 Start recording by pressing button **● a longer time**.
- The picture from the other recorder or camera recorder **and** the text/graphics box will be recorded.

11.4 To switch off recording of the text/graphics box press button **TIP**.
- From now on, only the picture of the other recorder/ camera recorder will be recorded.

11.5 To terminate recording press button ⏻.

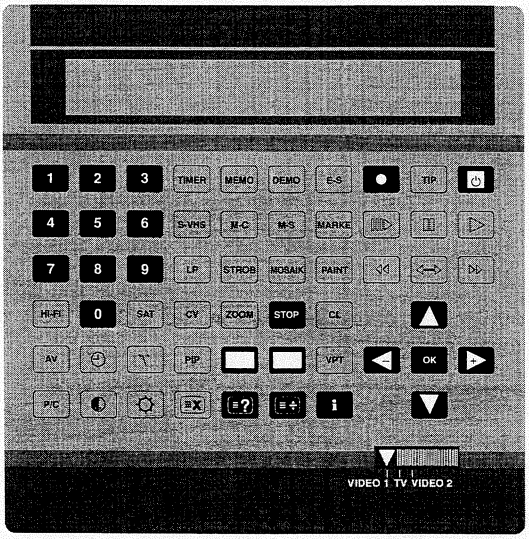
⚠ If button ⏻ is pressed once again, the stored text/ graphics boxes will be lost.

Teletext Operation with this Recorder

Teletext (Videotext) is a service free of charge of the TV stations which is emitted together with the TV bradcasts, processed by the recorder, and then made visible on the TV screen.

Teletext consists of a large number of text pages containing information such as weather forecasts, sports and politic news, etc.

The following buttons will be required


1
2
3
TIMER
MEMO
DEMO
E-S
TIP
4
5
6
S-VHS
M-C
M-S
MARKE
7
8
9
LP
STROB
MOSAIK
PAINT
HI-FI
0
SAT
CV
ZOOM
STOP
CL
AV
PIP
VPT
OK
P/C
i
VIDEO 1 TV VIDEO 2

1. Selecting a TV programme

The Teletext service offer as well as the organization and composition of the individual pages differs from TV station to TV station.

1.1 For this reason, first use button ▲ or ▼ to select that TV programme the Teletext pages of which you wish to see.

2. Selecting Teletext pages ...
... with T O P - text (Table Of Pages)

(Introduction by the German TV stations: Autumn 1989)

With this further development of the Teletext service currently in use you need no longer to enter the numbers of the Teletext pages. You now have the possibility to choose out of an overall view page certain **topics**, **subtopics** and **individual pages** by simply pressing a button.

The illustration below shows the scheme of selection.

2.1 Select page **Info** with button **i**.

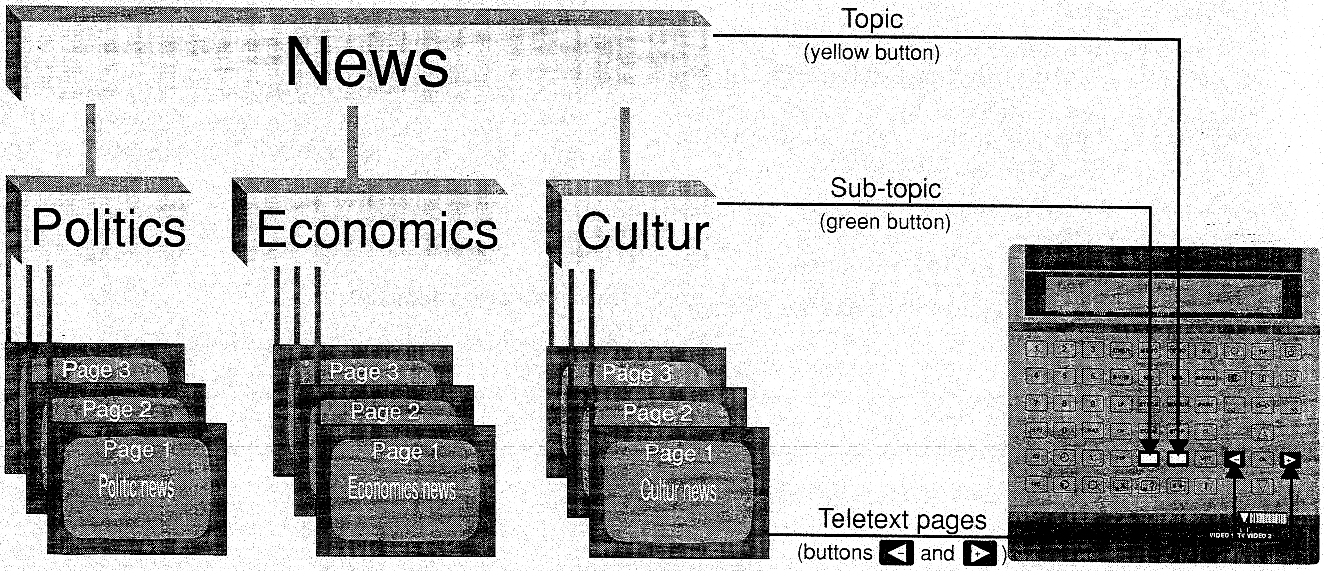
2.2 Select the line **Teletext** in the page **Info** using the numbered button **2**.
– The Teletext page 100 (= Contents) appears.

2.3 Select the desired **topic** in the page Contents. To do that, repeatedly press the **yellow** button, until the desired topic is obtained.
– The Info line shows the **first sub-topic** and the **next topic**.

2.4 Search the **desired sub-topic** in the **selected topic** by repeatedly pressing the **green** button, until the **desired sub-topic** appears.
– The Info line will show the **next sub-tobic** and the **next topic**.

2.5 If the sub-topic consists of **several** pages, these can be selected with the buttons ◀ or ▶.

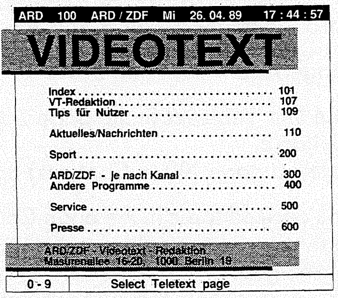
> ⚠ Your recorder will automatically store three Teletext pages.
> This enables quick access to the following Teletext pages:
> – The page of the next topic;
> – the page of the next sub-topic;
> – the following page of the selected sub-topic.


News
Topic
(yellow button)
Politics
Economics
Cultur
Sub-topic
(green button)
Page 3
Page 2
Page 1
Politic news
Page 3
Page 2
Page 1
Economics news
Page 3
Page 2
Page 1
Cultur news
Teletext pages
(buttons ◀ and ▶)

3. Selecting Teletext pages ...
... by entering the page numbers.

3.1 Select page **Info** with button **i**.

3.2 Select the line **Teletext** in the page **Info** using the numbered button **2**.
– The Teletext page 100 (= Contents) appears.



ARD 100 ARD / ZDF Mi 26. 04. 89 17 : 44 : 57

VIDEOTEXT

Index	101
VT-Redaktion	107
Tips für Nutzer	109
Aktuelles/Nachrichten	110
Sport	200
ARD/ZDF - je nach Kanal	300
Andere Programme	400
Service	500
Presse	600

ARD/ZDF - Videotext - Redaktion
Masurenallee 16-20 1000 Berlin 19

0 - 9 Select Teletext page

3.3 Select the desired Teletext page in the Contents page by entering the number of the Teletext page as three figures using the numbered buttons **1** ... **0**.
– The page will appear after a short time.

3.4 Using the buttons ◀ or ▶ it is possible to step through the Teletext pages in upward or downward direction.

3.5 Each pressure on the **green button** permits to skip **10 pages**.

3.6 Each pressure on the **yellow button** permits to skip **100 pages**.

3.7 To select the **called up** Teletext page of **other** TV programmes (programme positions) press button ▲ (upwards) or button ▼ (downwards).

⚠ If a TV station offers the **TOP-text-System**, the recorder **automatically** switches to this system.

4. Multiple pages

One page number may contain several subpages, which are automatically changed by the broadcasting stations. Subpages can be recognized by an insert below the clock time or Stop indication; eg: 1/2 means that the first of two existing subpages is shown.

4.1 If you wish to hold a subpage for a longer period, then press button **STOP**.
– Instead of the clock time, **Stop** will appear.

4.2 Pressing button **STOP** again will cancel the hold function.

5. Enlarging the character size

Repeatedly pressing button ⊟ :

5.1 doubles the character size in the top half of the shown Teletext page;

5.2 doubles the character size in the bottom half of the shown Teletext page;

5.3 returns the entire page to normal viewing size.

6. Reveal

Certain pages may contain "hidden" information, eg: quiz answers or the VPS times for programming your video recorder.

6.1 Press button ⍰ to make the "hidden" information visible.

6.2 Press button ⍰ once more to "conceal" the information again.

7. Subtitles to TV broadcasts

Certain broadcasts are provided with subtitles for those being hard of hearing. The page numbers (eg: 150) of these subtitles are given in the announcements before these broadcasts and in the Teletext pages "Subtitle preview".

7.1 At the beginning of such a broadcast, enter the number of the subtitle page with the numbered buttons **1** ... **0**.
– The subtitles of the selected TV programme will appear on the TV screen.

7.2 Button ⊟ permits to enlarge the subtitles.

8. Terminating Teletext

8.1 To return to the **Info** page press button **i**.

8.2 To return to the TV picture, press button **i** once again.

Further Teletext possibilities

9. Recording Teletext pages

9.1 Insert a cassette with sufficient playing time observing erase prevention.

9.2 Enter the desired TV programme with the numbered buttons **1 ... 0**, then press button ▲.

9.3 Press button **i**.
– The page **Info** appears.

9.4 Select the line **Teletext** in page **Info** using the numbered button **2**.

9.5 Select the desired Teletext page with the numbered buttons **1 ... 0**.
– After a short time the Teletext page appears on the TV screen.

9.6 Start recording by pressing button ●.
During recording, further Teletext pages can be selected with the numbered buttons **1 ... 9**.
These pages will then be recorded without interruption.

9.7 Terminate recording by pressing button ⏻.

10. Recording subtitles

It is possible to record the subtitles broadcasted by the TV stations.

10.1 Insert a cassette with sufficient playing time; observe erase prevention.

10.2 Select the desired TV programme with the numbered buttons **1 ... 0**, then press button ▲.

10.3 Press button **i**.
– The page **Info** appears.

10.4 Select the line **Teletext** in the page **Info** with the numbered button **2**.
– Teletext page 100 appears.

10.5 Enter the number of the subtitle page with the numbered buttons **1 ... 0**.
– The subtitles of the selected TV programme appear on the TV screen.

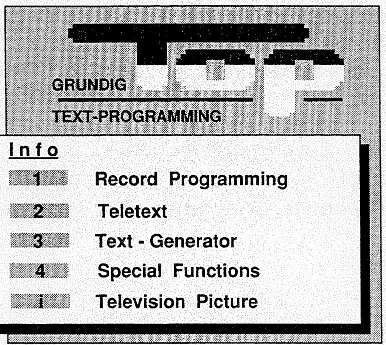
10.6 Start recording by pressing button ● **a longer time**.

10.7 Terminate recording by pressing button ⏻.

11. Programming subtitle recordings

11.1 Select page **Info** with button **i**.

11.2 Select the line **Text-Generator** in the page **Info** with the numbered button **3**.



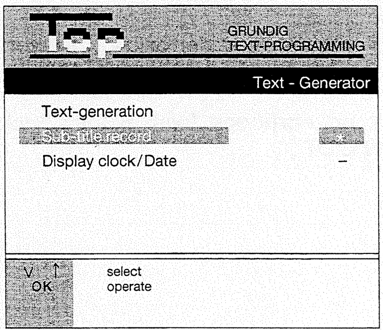
GRUNDIG
TEXT-PROGRAMMING

Info

1 Record Programming
2 Teletext
3 Text - Generator
4 Special Functions
i Television Picture

– The page **Text-Generator** appears.

11.3 Using button ▼, select the line **Sub-title record** and activate it with button **O K**.
– An asterisk ✱ appears at the end of the line **Sub-title record**; the function is activated.



GRUNDIG
TEXT-PROGRAMMING

Text - Generator

Text-generation
Sub-title record *
Display clock/Date –

V ↑ select
OK operate

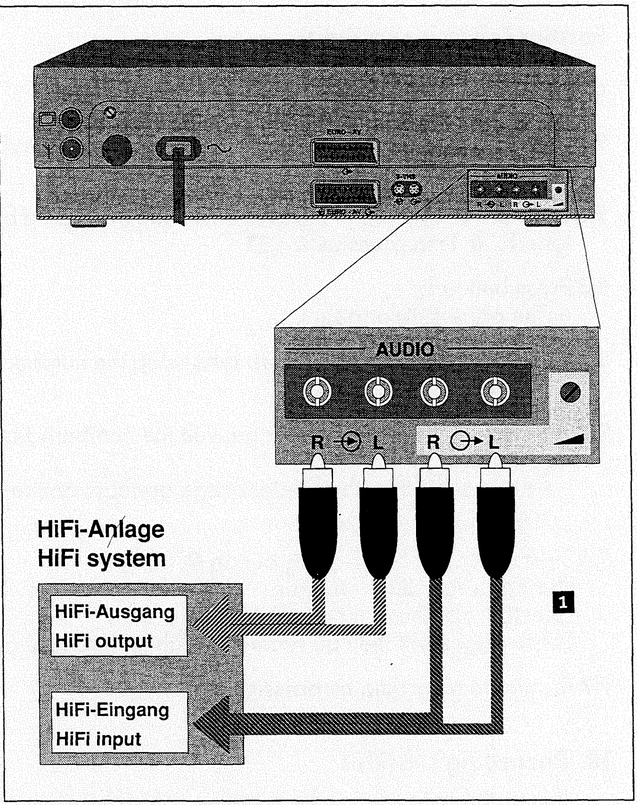
11.4 To return to the TV picture press button **i** two times.
– From now on, the subtitles will be recorded on **each recording** made.

⚠ The further programming steps are similar to those described in chapter "Programming Recordings" on the pages 23 to 30.

The Multi-Audio-System

Your recorder has two different sound recording and playback systems:

- The hifi track (helical track),
  for stereo and two-channel sound recordings.
  - By means of this track, the video recorder can also be used as hifi tape recorder for high-quality recording and playback of the hifi sound.
- The mono (longitudinal) track,
  for sound playback on standard VHS video recorders, and for Trick recordings, Trick/Mix recordings and dubbing.
  - With this facility it is possible to add a further sound recording at a later date. The sound source for this purpose can be a hifi system, a cassette recorder, a CD player, two microphones, or another video recorder.



Connection

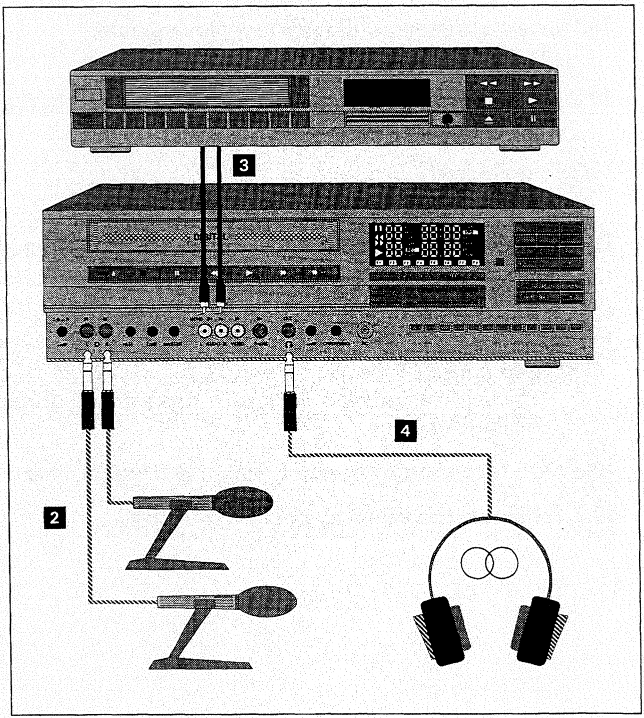
1 Connect a hifi system with a commercially available audio cable to the sockets **AUDIO**.

R →○ **L** = audio input, **R** = right channel, **L** = left channel;
R ○→ **L** = audio output, **R** = right channel, **L** = left channel.

2 Two microphones (with 6.3mm Jack plug) can be connected to the sockets **L IO R IN**.

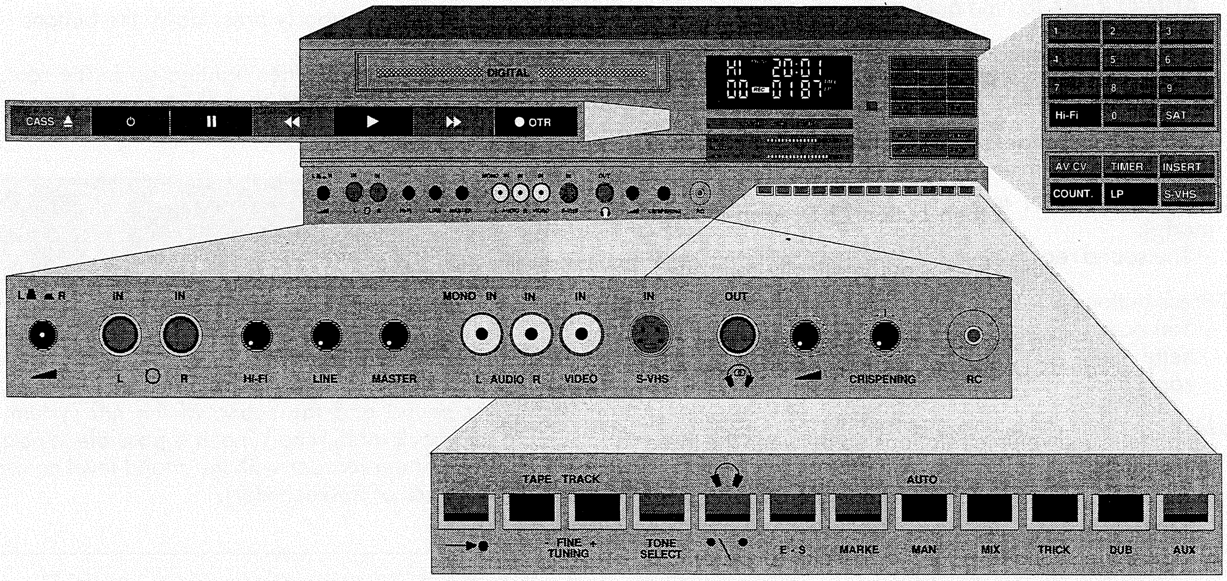
3 Connect a cassette recorder or a CD player with a commercially available audio cable to the sockets **L AUDIO R IN**.

4 Connect an earphone (with 6.3mm Jack plug) to the socket ☊ **OUT**.



The Multi-Audio-System

The following buttons and controls will be required



CASS ▲
○
II
◀◀
▶
▶▶
● OTR
DIGITAL
1
2
3
4
5
6
7
8
9
Hi-Fi
0
SAT
AV CV
TIMER
INSERT
COUNT.
LP
S-VHS
L R
IN
IN
MONO IN
IN
IN
IN
OUT
L
R
HI-FI
LINE
MASTER
L AUDIO R
VIDEO
S-VHS
CRISPENING
RC
TAPE TRACK
AUTO
– FINE + TUNING
TONE SELECT
E-S
MARKE
MAN
MIX
TRICK
DUB
AUX

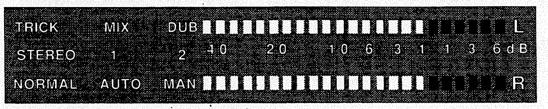
Preparations

1. Switch on hifi system and select the connected sound source (eg: CD player, cassette recorder, etc.).
2. Insert a cassette with sufficient playing time into the recorder.
3. If desired select the longplay mode by pressing button **LP**.
   - *LP* lights up in the **display of the recorder,** the playing time of the cassette will be doubled.
4. We recommend to switch over the hours/minutes indication to "tape length indication" (6 digits) by pressing button **COUNT.**.
   The "tape length indication" can be re-set to 000000 by pressing numbered button **0** and then button **COUNT**.

1. Sound recordings from a hifi system

1.1 Press button **HiFi** and then button ◩ (= loop-through mode).
- The display shows: HI
- The sound recording level is automatically controlled. If you wish to manually control the sound level, then

1.2 press button **AUTO/MAN** and turn the control **MASTER** to the right, until the first red mark (+ 1 dB) lights up during the loudest passages of the recording.



TRICK
MIX
DUB
L
STEREO
1
2
40
20
10
6
3
1
1
3
6dB
NORMAL
AUTO
MAN
R

⚠ The second red mark should not light up.

1.3 Start recording by pressing button ●.

1.4 To switch to recording–pause press button **II**.

1.5 To terminate recording press button ⏻.

2. Sound recordings from several sound sources

It is possible to record the sound from three sound sources.

- From a hifi system being connected to the sockets **AUDIO R ⊖ L** (on the back of the recorder);
- from a cassette recorder or a CD player being connected to the sockets **AUDIO IN L R** (on the front of the recorder);
- from two microphones being connected to the sockets **L ⊙ R IN** (on the front of the receiver).

2.1 Press button **HiFi** and then button ◪ (= loop-through mode).
- The sound recording level is automatically controlled.

2.2 Press button **MIX**.
- You now hear the sound from the hifi system, the cassette recorder/CD player, **and** from the two microphones.

2.3 Mixing the sound volume relationship between the three sound signals:
- **a)** adjust the sound level of the hifi system with control **LINE**;
- **b)** adjust the sound level of the cassette recorder/CD player with control **Hi-Fi**;
- **c)** adjust the sound level of the two microphones with the control ◢;
  - unlock control = right channel,
  - unlock **and** pull control = left channel.

> ⚠ We recommend to "switch off" sound inputs not being used by turning the respective control to the left end stop.

2.4 If you wish to manually control the sum of the sound signals, press button **AUTO/MAN** and turn the control **MASTER** to the right until the first red mark (+ 1 dB) lights up during the loudest passages of the recording. The second mark should not light up.

2.5 Start recording by pressing button ●.

2.6 Switch to recording-pause by pressing button **II**.

2.7 Terminate recording by pressing button ⏻.

3. Checking the sound recording

3.1 Via the loudspeakers of the stereo system.

3.2 Via a headphone connected to socket 🎧 **OUT**, the volume of which can be adjusted with control ◢.

4. Sound playback

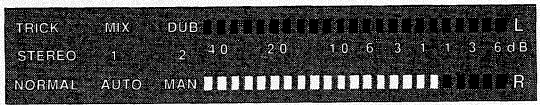
4.1 Start playback by pressing button ▶.

4.2 Terminate playback by pressing button ⏻.

5. Adjusting the hifi sound track

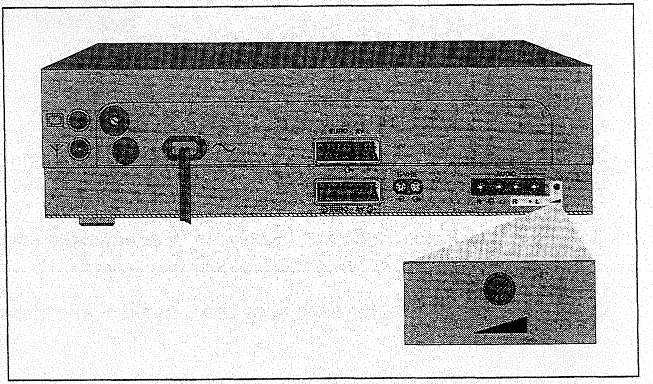
When playing back cassettes "recorded on another machine" it may be necessary to readjust the sound track.

5.1 To do that, continuously press down the buttons **– TAPE TRACK +**.
- The more vertical lines lighting up in the sound display of the right-hand channel the better the playback quality.



6. Matching the volume level

6.1 If you should notice a volume difference between the recorder sound and the sound of the hifi system when playing back a hifi recording, it is possible to adapt the volume of the recorder with the sound level control ◢ (on the back of the recorder).



7. Dubbing

It is possible to add a sound recording to a video recording at a later date. For this purpose, three sound sources are at your disposal:

- the sound recorded on the hifi track of the tape;
- the sound being applied by a hifi system to the sockets **AUDIO**;
- the sound being delivered by two microphones.

> ⚠ The original sound on the longitudinal track will completely be erased.

7.1 Insert a recorded cassette into the recorder.

7.2 During playback search the tape position where dubbing is to be started, then press button **II** (playback – pause).

7.3 Press button **DUB** (activates dubbing).

7.4 If you wish mixed recording, press button **MIX**.

7.5 Mixing the sound relationship:
- Adjust the sound level from the hifi track of the tape with control **HiFi** (only possible when the tape is "running");
- the sound level from a stereo system with control **LINE**;
- the sound level from the microphones with control ◢.
- The sum of the three sound signals will automatically be controlled.

⚠ It is recommended to »switch off« the audio inputs not being used by turning the respective control to the left end stop.

7.6 If you wish to adjust the sound levels manually, press button **AUTO/MAN** and turn the control **MASTER** to the right until the red mark (+1 dB) lights up during the loudest passages of the sound.
The second red mark should not light up.

7.7 Press button ► to start dubbing.
- The original sound remains on the hifi track, the new sound is recorded onto the longitudinal track.

7.8 Terminate dubbing by pressing button **DUB.** and then button ⏻.

8. Trick dubbing

It is possible to record **additional** "new sound information" onto the longitudinal track.
The original sound (background sound) will become softer when the external sound source is "activated".
If the external sound source is muted, the original sound will become louder again.
On playback, **the entire sound information** is heard.

8.1 Insert a recorded cassette into the recorder.

8.2 During playback search the tape position where the external recording is to be started, then press button **II** (playback–pause).

8.3 Press button **TRICK** (activates Trick dubbing).

8.4 If you wish Mix dubbing press button **MIX**.

8.5 Mixing the sound relationship:
- Adjust the sound from the hifi track of the tape with control **HiFi** (only possible when the tape is "running");
- the sound from the stereo system with control **LINE**;
- the sound from the microphones with control ◢.
- The sum of the three signals will automatically be controlled.

⚠ It is recommended to »switch off« the audio inputs not being used by turning the respective control to the left end stop.

8.6 If you wish to manually control the sound signals, press button **AUTO/MAN** and turn the control **MASTER** to the right until the first red mark (+1 dB) lights up during the loudest passages of the sound.
The second red mark should not light up.

8.7 Press button ► to start Trick dubbing.
- The original sound remains on the hifi track, the new sound is recorded onto the longitudinal track.

8.8 To terminate Trick dubbing press button **TRICK** and then button ⏻.

9. Simultaneous Mix-dubbing

It is possible to record simultanously to the video/audio signal (eg: from a TV receiver or from a second recorder or a camera recorder) the sound from an external sound source (eg: stereo system or microphones).
The same mixed sound is recorded as well on the hifi (helical) track as on the mono (longidudinal) track.

9.1 Insert a cassette not protected against erasure.

9.2 Select the video/audio source by repeatedly pressing button ▼ of the remote control until the desired indication appears on the recorder:

1 ... 49 = programme position of the TV receiver;
AV = video/audio source on the socket ⊖ **EURO-AV** ⊖;
CV = video/audio source on the sockets **AUDIO IN** and **VIDEO IN**;
S1 = video/audio source on the sockets **S-VHS IN** and **VIDEO IN** (on the front of the recorder);
S2 = video/audio source on the sockets **AUDIO R ⊖ L** and **S-VHS ⊖** (on the back of the recorder).

9.3 Start playback from the **external** video/audio source.

9.4 Start mixed dubbing by pressing button **MIX**.

9.5 Mix the relationship of the sound levels:
- the sound of the TV programme or of the second recorder/camera recorder with control **HiFi**;
- the sound of the stereo system with control **LINE**;
- the sound of the microphones with control ◢.
- The sum of the three signals will automatically be controlled.

⚠ It is recommended to switch off the sound sources not being used by turning the respective control to its left end stop.

9.6 If you wish to manually adjust the sound levels, press button **AUTO/MAN** and turn the **MASTER** control to the right until the first red mark (+1 dB) lights up during the loudest sound passages.
The second red mark should not light up.

9.7 Start mixed dubbing by pressing button ●.
When recording is running, the Mix function cannot be switched off.

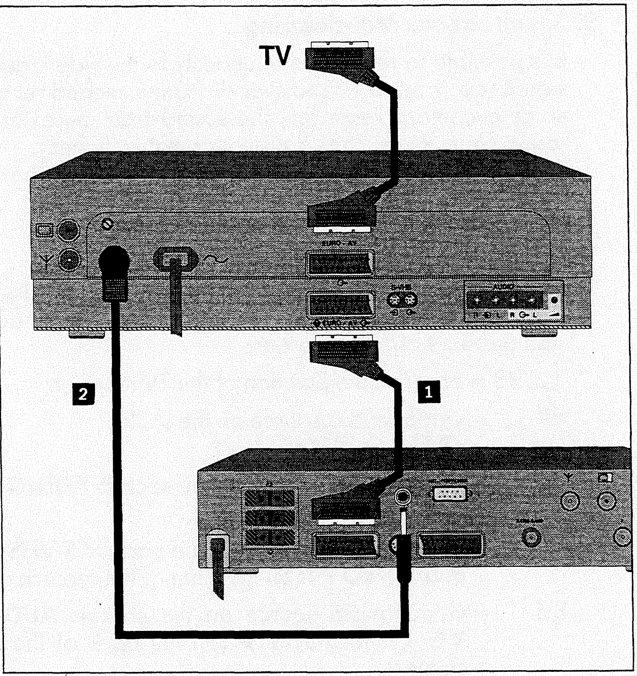
9.8 To switch off the recording press button ⏻.

Operation with a Satellite Receiver

Connection

1 Connect the socket ⊕ **EURO AV** ⊖ of your recorder with the respective socket of an appropriate Satellite Receiver (= video/audio signal).

2 Connect the socket **UNIVERSAL** ㉝ with the respective socket of an appropriate Satellite Receiver (= control line).



Operation:

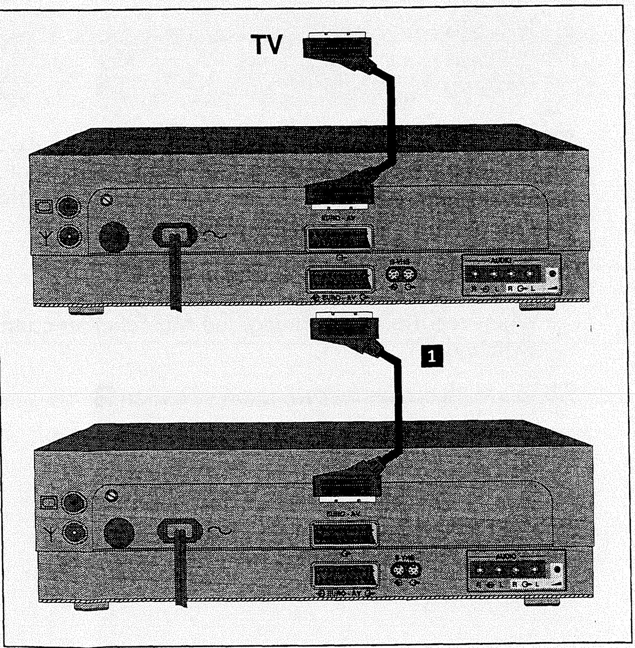
1. Recording of Satellite broadcasts is described on page 20.
2. Programming recordings of Satellite broadcasts is described on the pages 25, 27, and 29.

Operation with a Second Recorder

Connection

1 Connect the socket ⊕ **EURO-AV** ⊖ of your recorder with the respective socket of the other recorder.

– Adapter cables can be obtained from your dealer.



Copying tapes

1. Switch on TV receiver (serves as monitor) and select the programme position provided for video playback.
2. Insert the cassette from which you wish to record into the **playback**-recorder, and a cassette of sufficient playing time into your **recording**-recorder.
3. It is recommended to switch off the colour noise suppression by pressing button ◑.
4. On your **recording**-recorder press button **AV**.
5. Start playback on the **playback**-recorder and at the same time press button ● on your **recording**-recorder.
   – Copying is "running", the TV screen can be used as monitor for checking the copy.
6. Terminate copying with button ⏻.

Operation with a Second S-VHS Recorder

Connection

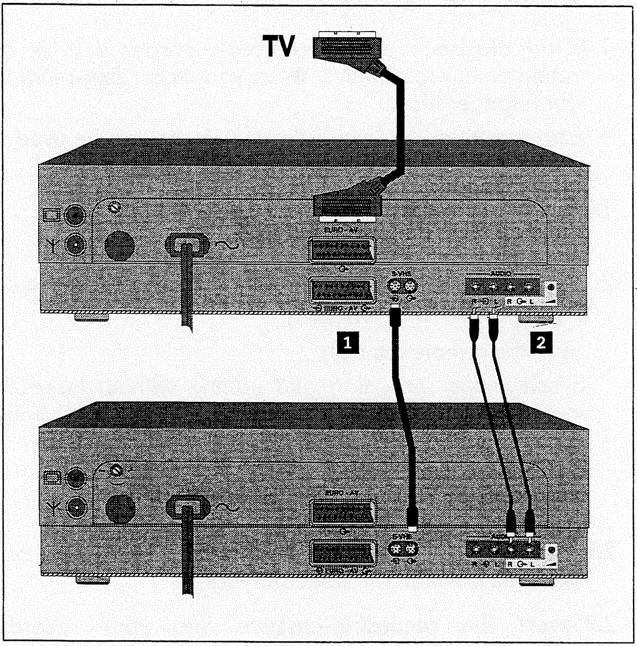
Sockets on the back of the recorder

1 Video signal

Connect the socket **S-VHS** -⊖ (= S-VHS socket**S 2**) of your recorder with the respective video socket of the other S-VHS recorder.

2 Audio signal

Connect the sockets **AUDIO R** -⊖ **L** of your recorder with the respective audio sockets of the other recorder.



Sockets on the front of the recorder

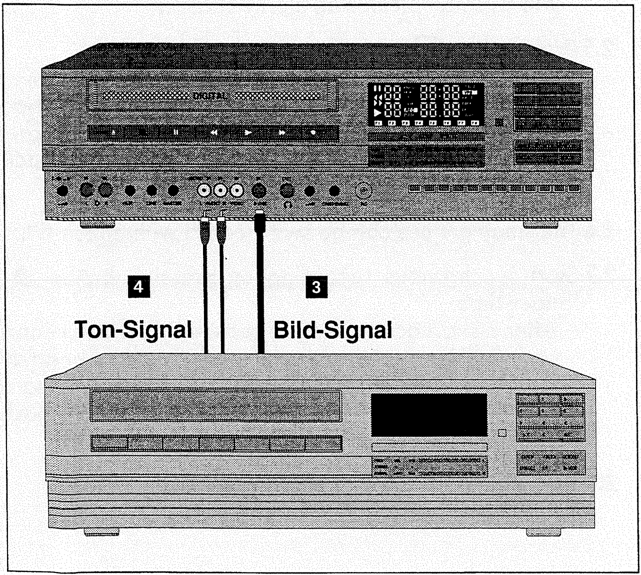
3 Video signal

Connect the socket **S-VHS IN** (= S-VHS socket **S 1**) of your recorder with the respective video socket of the other S-VHS recorder.

4 Audio signal

Connect the sockets **L AUDIO R** of your recorder with the respective audio sockets of the other S-VHS recorder.

– Adapter cables can be obtained from your dealer.



Copying tapes

1. Switch on TV receiver (serves as monitor) and select the programme position for video playback.
2. Insert the cassette you wish to record from into the **playback**-recorder and a cassette with sufficient playing time into your **recording**-recorder.
3. It is recommended to switch off the colour noise suppression by pressing button ⊛.
4. Selecting the Input sockets: For socket **S 1** (S-VHS socket, front) press numbered button **1** and then button **S-VHS** (the display shows S 1).
   For socket **S 2** (S-VHS socket, rear) press numbered button **2** and then button **S-VHS** (the display shows S 2).
5. Start playback on the **playback**-recorder and, at the same time, press button ● on your **recording**-recorder.
   – Copying is "running", the TV screen can be used as monitor for checking the copy.
6. Terminate copying with button ⏻.

Operation with a Camera Recorder

Connection

Standard-VHS-Camera-Recorder

1 Video signal

Connect the socket **VIDEO IN** of your recorder with the respective socket of the camera recorder.

2 Audio signal

Connect the socket(s) **L (MONO) AUDIO R** of your recorder with the respective audio socket(s) of the camera recorder.

3 Dialogue signal

(For synchronous recording)
If the camera recorder is provided with an appropriate start/stop socket, connect the socket **RC** of your recorder with this start/stop socket of the camera recorder.
– Adapter cables can be obtained from your dealer.

S-VHS-Camera-Recorder

4 Video signal

Connect the socket **S-VHS IN** of your recorder with the respective video socket of the camera recorder.

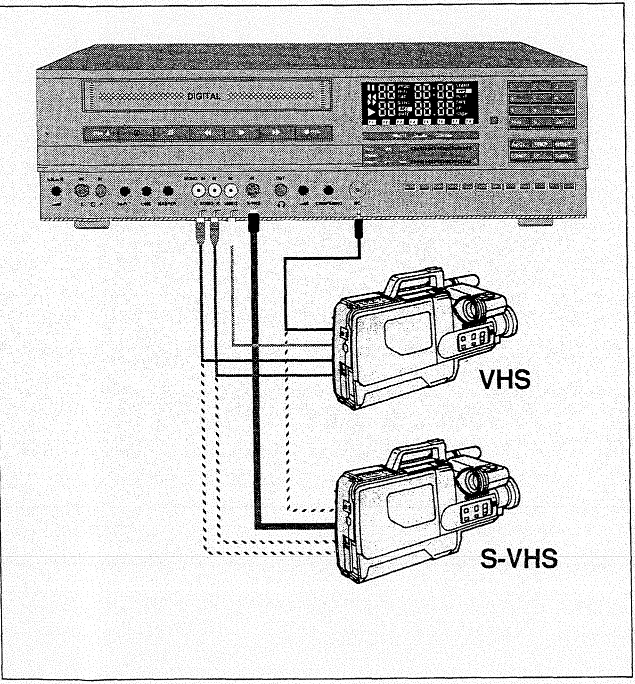
5 Audio signal

Connect the socket(s) **L (MONO) AUDIO R** of your recorder with the respective audio socket(s) of the camera recorder.

6 Dialogue signal

(For synchronous recording)
If the camera recorder is provided with an appropriate start/stop socket, connect the socket **RC** of your recorder with this start/stop socket of the camera recorder.

– Adapter cables can be obtained from your dealer.



1. **Copying** (without synchro-edit-start function)

(with the remote control)

1.1 Switch on TV set (serves as monitor) and select programme position for video playback.

1.2 Insert the cassette from which you wish to record into the **camera**-recorder and a cassette with sufficient playing time into your **recording**-recorder.

1.3 On your **recording**-recorder, first press button **CV** and then button △ (for socket **VIDEO IN**) **or**
press numbered button **1**, then button **S-VHS**, and then button △ (for socket **S-VHS IN**).

1.4 Start playback on the **camera**-recorder and, at the same time, press button ● on your **recording**-recorder for a longer time.

– Copying starts to "run"; the TV screen can be used as control monitor.

1.5 Terminate recording with button ⏻.

2. Synchronous recording and editing without losses

(synchro-edit-start function)

(with the remote control)

Synchronous recording and editing without losses by means of a "dialogue" between your recorder (VS680) and GRUNDIG-camera recorders of the series:
Standard-VHS: VS-C 40, VS-C 60 and VS 170;
S-VHS: S-VS-C 80 and S-VS 180.

2.1 Switch on TV set (serves as monitor) and select programme position for video playback.

2.2 **Insert the recording**-cassette into your recorder (VS680).
– During playback, search the end of the scene, where the "new recording" is to be added, then press button **II** (playback – Pause).

2.3 Insert the **playback**-cassette into the camera recorder and switch the camera recorder to playback – Pause.

2.4 On the remote control press button **CV** and then button **PIP** (for socket **VIDEO IN**) **or**
press the numbered button **1**, then button **S-VHS**, and then button **PIP** (for socket **S-VHS IN**).
– The still picture from the camera recorder is now visible as small picture on the TV screen.

2.5 Press button ⇳ on the remote control.
– The small picture will be displayed as large picture.
– With the camera recorder switched to playback, search the beginning of the desired scene, then press the Pause button on the camera recorder (playback – Pause).

2.6 The small picture can be switched off with button **CL**.

2.7 Start synchronous recording by pressing button ● **a longer time.**
– After a short data dialogue between the video recorder (VS680) and the camera recorder, playback from the camera recorder and recording of your video recorder (VS680) will **synchronously** (simultaneously) be started.

2.8 Terminate recording with button ⏻.

The Continuous Functions of the Recorder

Your recorder can:

- record continuously from different signal sources, eg: from a TV receiver or from other units connected to the respective sockets.
- Continuous playback

Preparations

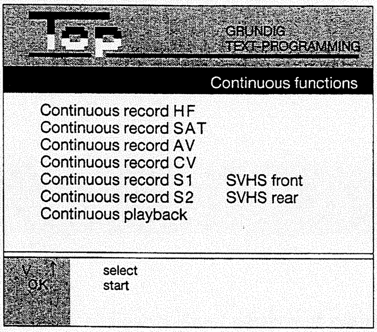
1. For the **recording** functions, insert a cassette with **sufficient** playing time.
   For HF continuous recording, select the desired TV programme on programme position 1 (see pages 15–18).
2. For the **playback** functions, insert a **recorded** cassette.

1. Example: Continuous function recording

1.1 Select page **Info** with button **i**.

1.2 Select the line **Special Functions** in the page **Info** using the numbered button **4**.

1.3 Select the line **Continuous functions** in the page **Special Functions** using the numbered button **3**.
– The page **Continuous functions** appears.



Top
GRUNDIG
TEXT-PROGRAMMING

Continuous functions

Continuous record HF
Continuous record SAT
Continuous record AV
Continuous record CV
Continuous record S1 SVHS front
Continuous record S2 SVHS rear
Continuous playback

▼▲ select
OK start

1.4 With the buttons ▼ and ▲, select the desired function **Continuous record**.
– The selected line is displayed on blue background.

1.5 Start the **Continuous record** function by pressing button **OK**.
– The recorder records until the end of the tape is reached, then rewinds the tape to the beginning, and starts recording again.

1.6 Terminate the continuous functions with button **CASS ⏏ on the recorder.**

2. Example: Continuous function playback

2.1 Start playback by pressing button ▶.

2.2 At the point where playback is to be stopped press button ⏻ and then button **i**; the page **Info** appears.

2.3 Select the line **Special Functions** in the page **Info** using the numbered button **4**.

2.4 Select the line **Continuous functions** in the page **Special Functions** using the numbered button **3**.
– The page **Continuous functions** appears.

2.5 With the buttons ▼ and ▲, select the function **Continuous playback**.
– The selected line is displayed on blue background.

2.6 To start the continuous function **playback**, press button **OK**.
– The tape is wound to the beginning and playback is started.
Playback is continued up to the marked point, the tape is rewound to the beginning, and playback is started again.

2.7 Terminate the continuous function with button **CASS ⏏ on the recorder.**

The Electronic Combination Lock

Your recorder is equipped with an **electronic combination lock**.
This can be used to »lock« all functions. Even a cassette which is inserted after the lock is applied cannot be removed until you »unlock« the recorder again.
The lock can be applied and removed quite simply by using a **four-digit code number**.
Enter this **personal code number** into the boxes opposite.
This page can then be removed and stored in a safe place.
If you should forget the code number or mislay this sheet, your dealer will be able to unlock your recorder.

Your personal code number!

1. Locking the recorder

1.1 Prepare the recorder for entering the code number by first pressing button ⏻, then the numbered buttons **8 5 0 0**, and finally button **OK** (on the remote control).
- Indication on the recorder: **0:00**.

1.2 Enter the 4-digit code number with the numbered buttons **1**...**0**.

⚠ **Please note down your personal code number!**

1.3 Store the code number with button **OK**.
- The display shows ***A 0***, the time of day and ***CASS***.
- The recorder is »locked«.

⚠ If now a cassette is inserted, this cannot be removed again.

2. Unlocking the recorder

2.1 Enter your personal code number with the numbered buttons **1**...**0** and press button **OK**.
- The indication ***A 0*** in the display goes out; the time of day and ***CASS*** will be indicated.
- The recorder is "unlocked", all the functions can be selected again.

Changing the Time and Date

1. Changing the time (only possible with the remote control)

1.1 Enter the "new" time with the numbered buttons **1**...**0** and confirm with button ◷.
- After pressing button ◷, the clock starts running.

⚠ The digital clock continues running even if the recorder is disconnected from the mains (the time is not indicated in the display).

⚠ On Teletext operation with programme position 1, the time will automatically be updated.

2. Changing the date (only possible with the remote control)

2.1 Press button ◷.
- The date appears.

2.2 Enter the date (day and month) with the numbered buttons **1**...**0** **as four figures** and confirm with button ◷.
- The date and year will be indicated.

2.3 Enter the year with the numbered buttons **1**...**0** **as two figures** (eg: **9** and **0** for 1990) and confirm with button ◷.

2.4 It is possible to display the date also during recording or playback by pressing button ◷ **twice**.

Changing the Display Brightness

1. Changing the brightness of the clock time indication
(only possible with the remote control)

1.1 With button ⏻ switch recorder in "standby mode".

1.2 By repeatedly pressing button ◁ (darker) or button ▷ (brighter), adjust the brightness of the time indication as desired.
- The last adjustment remains stored in memory.

2. Changing the brightness of both display fields
(only possible with the remote control)

2.1 Switch on recorder with button ▲.

2.2 Change brightness of display fields as desired by repeatedly pressing button ◁ (darker) or button ▷ (brighter).
- The last adjustment remains stored in memory.

Remote Control of other GRUNDIG Video Recorders

With this remote control it is possible to remotely control several GRUNDIG video recorders independently from each other:

1. Your VS 680 and a second video recorder of the series 600;
2. Your VS 680 and a second video recorder of the series 400 or 500.

   For this purpose, the remote control and/or the video recorder concerned must be adapted.

1. Remote control of two video recorders of the 600 series

1.1 For operating your VS 680 slide the switch into position **VIDEO 1**. In this case, no adaption is required.

1.2 For controlling the **second recorder of the 600 series**, the command structure must be changed.

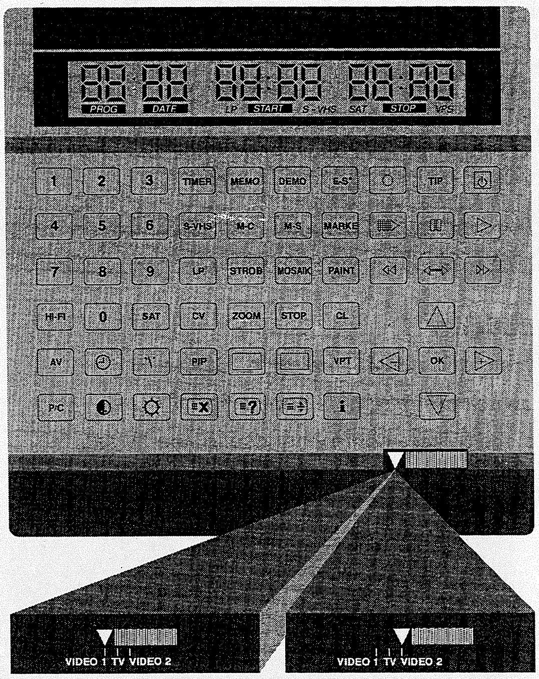
1.2.1 Push the switch into position **VIDEO 1**.

1.2.2 Pull the mains plug of your VS 680 out of the wall socket.

1.2.3 Point the remote control at the **second recorder**, press one after the other the numbered buttons **8 5 1 7** and then button **OK**.
– The second recorder now will only react if you push the switch into position **VIDEO 2**.

1.3 Plug the mains plug of your VS 680 into the wall socket again.

1.4 If you wish to cancel the adjustment, push the switch into position **VIDEO 2**, press one after the other the numbered buttons **8 5 1 6** and then button **OK**.


PROG
DATE
LP
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S-VHS
SAT
STOP
VPS
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2
3
TIMER
MEMO
DEMO
E-S
TIP
4
5
6
S-VHS
M-C
M-S
MARKE
7
8
9
LP
STROB
MOSAIK
PAINT
HI-FI
0
SAT
CV
ZOOM
STOP
CL
AV
PIP
VPT
OK
P/C
i
VIDEO 1 TV VIDEO 2
VIDEO 1 TV VIDEO 2

Switch in position **VIDEO 1**: You control your VS 680.
Switch in position **VIDEO 2**: You control the recorder of the 600 series.

---

2. Remote control of video recorders of the series 400 and 500

2.1 For controlling your VS 680, slide the switch into position **VIDEO 1**, press one after the other the numbered buttons **8 5 2 7** and then button **OK**.
– Your VS 680 now will only react if the switch is set to **VIDEO 1**.

2.2 For controlling recorders of the series **400** or **500** the command structure must be changed.

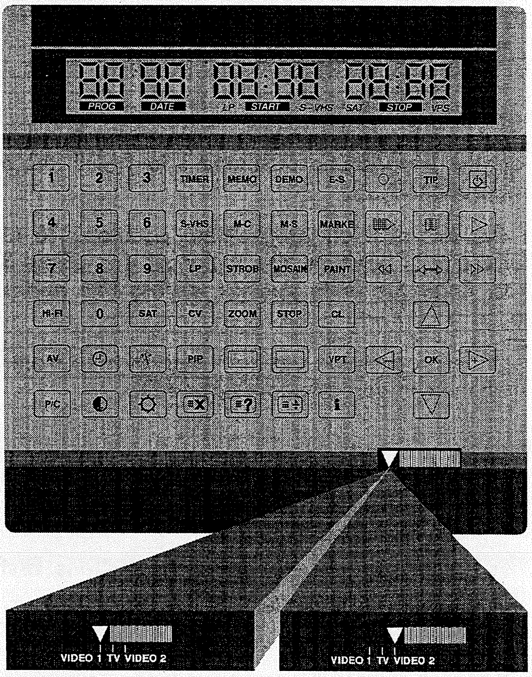
2.2.1 Push the switch into position **VIDEO 2**.

2.2.2 Press button ☼ (indication C0 16) and then, **within 5 seconds**, button •\•.
– Indication on the remote control: C0 10.

2.3.1 If you wish to cancel the change, push the switch into position **VIDEO 1**, press one after the other the numbered buttons **8 5 2 6** and then button **OK**.

2.3.2 Then slide the switch into position **VIDEO 2**, press button ☼ (indication C0 10) and then, **within 5 seconds**, button •\•.
– Indication on the remote control: C0 16.

⚠ Changing batteries cancels the new adjustment of the remote control.


PROG
DATE
LP
START
S-VHS
SAT
STOP
VPS
1
2
3
TIMER
MEMO
DEMO
E-S
TIP
4
5
6
S-VHS
M-C
M-S
MARKE
7
8
9
LP
STROB
MOSAIK
PAINT
HI-FI
0
SAT
CV
ZOOM
STOP
CL
AV
PIP
VPT
OK
P/C
i
VIDEO 1 TV VIDEO 2
VIDEO 1 TV VIDEO 2

Switch in position **VIDEO 1**: You control your VS 680;
Switch in position **VIDEO 2**: You control the recorder of the 400 or 500 series.

TV Operation

With this video remote control **RP 80 LCD** you can also remotely control GRUNDIG colour television receivers.

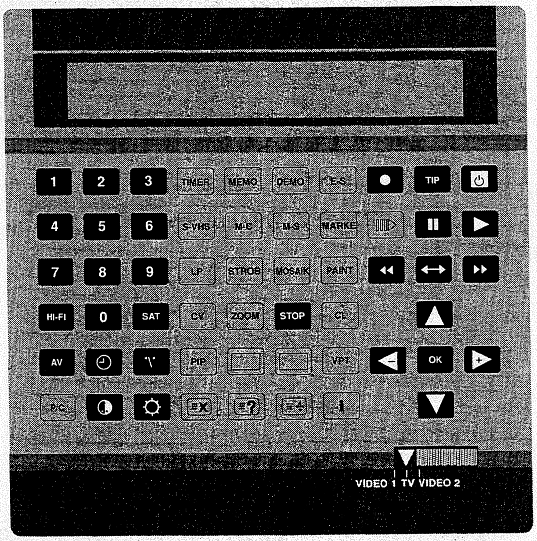
1. Receivers from 1988 on with the Tele-Pilot TP 661 and later models.
2. Receivers from 1984 on with the Tele-Pilot TP 590, TP 600, TP 610, TP 630, TP 650 and TP 660.

⚠ Which functions actually can be controlled depends of course on the type of your Grundig TV receiver.

Preparations:

1. Switch on TV set with the mains button.
2. Set switch of the remote control to **TV**.
3. Point the remote control handset at the TV set.

The following buttons will be required



TV sets from 1988 models on

1. Programme selection

1.1 Select the programme positions **1** to **9** with the numbered buttons **1 ... 9**.

1.2 For the two-position programme positions **10** to **49** enter the tens position, this will flash for about 3 seconds. Enter the **units** position **during this period of time.**

1.3 Select the programme positions step by step from **1** to **49** with the numbered buttons ▼ and ▲.

2. Picture and sound corrections

2.1 Change the volume by pressing button ◀ (softer) or button ▶ (louder) as long as required.

2.2 For all other picture and sound corrections, **first** select the function you wish to alter:

◑ = colour contrast
☼ = brightness
● = black and white contrast
II = stereo balance
◀◀ = bass tones
▶▶ = treble tones
TIP = tint correction on NTSC reception

2.3 Adjust the desired value by pressing button ◀ or ▶ as long as required.

2.4 To return to the **optimum settings** press button **OK**.

3. Freeze-frame

3.1 Press button **STOP**.
– You will obtain a »frozen« picture.

3.2 To return to the normal picture press button **STOP** once again.

4. Stereo broadcasts

If a broadcast is in stereo, your TV set will automatically switch to stereo sound reproduction.
– In the case of bad stereo sound quality press button '\' to switch to "mono reproduction", which will be of better sound quality.

5. Two-channel-sound broadcasts

In the case of a 2-channel broadcast, eg: a film with the original sound on sound track 2 and track 1 dubbed in the local language, you can select between the tracks. To do that

5.1 press button '\'.
– The display of the TV set will show **1** for sound track 1 and **2** for sound track 2.

6. Stereo base, spatial sound

Expands the stereo base in the case of stereo broadcasts.
Improves the sound impression in the case of mono broadcasts.

6.1 Switch on and off with button ↔.

7. Muting the TV sound

7.1 Button ▶ permits to switch on and off the TV sound.

8. Adjusting the volume of a headphone

8.1 Press button **SAT**, then use button ◀ or ▶ to adjust the volume of the headphone.

9. Clock time

9.1 Switch on and off with button ◷.

10. Standby

10.1 During TV pauses, you can switch your TV set to standby by pressing button ⏻.

10.2 Press one of the numbered buttons **1 ... 0**, button **AV**, or button **HiFi** to switch the TV set on again.

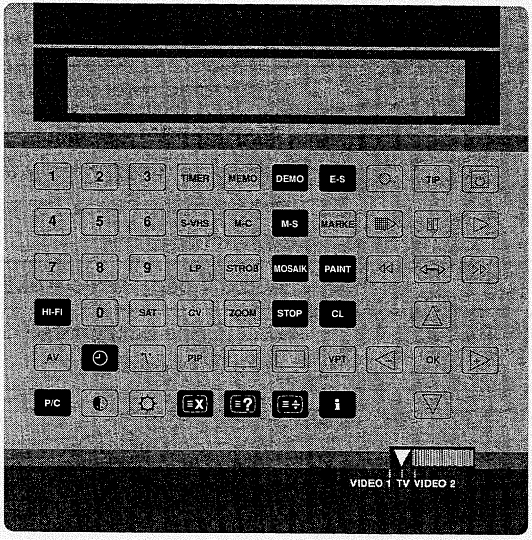
11. Buttons for Teletext operation

(if a GRUNDIG Videotext-Decoder is fitted)

Buttons RP 80 LCD	Buttons TP 661	Teletext function
E-S	▤	= Switch on Teletext
DEMO	TV	= Switch off Teletext Back to TV programme
CL	0000/PC+	= Teletext pages preselect
≡?	≡?	= Reveal
i	i	= Call up Contents page
PAINT	+1◇	= Next Teletext page (page no + 1)
≡÷	≡÷	= Enlarge screen contents and back to normal size
M-S	⧄	= MIX-mode (TV programme and Teletext)
STOP	–PC/STOP	= Hold subpage
◷	◷	= Clock display during TV operation
≡×	≡×	= Update mode
MOSAIK	◇	= Memory preselection
Hi-Fi	M + 1	= Next memory position
P/C	B - R	= Call up memory blocks

For detailed information about Teletext (Videotext) operation, see the operating instructions supplied with the Videotext Decoder.

The following buttons will be required for operation.



TV sets from 1984 models on

(with the Tele-Pilots TP 590, TP 600, TP 610, TP 630, TP 650 and TP 660)

1. Programme selection

1.1 Select the programme positions **1** to **9** with the numbered buttons **1**...**9**.

1.2 For the programme positions **10** to **29**, first select the tens position with button **P/C** (= **10**) or button **Hi-Fi** (= **20**), then enter the ones position with the numbered buttons **1**...**9**. Select the programme positions **AV** or **A.V** with the numbered button **0**.

2. Picture and sound corrections

2.1 Volume:

Press button ◁: the sound gets softer;
press button ▷: the sound gets louder.

2.2 Brightness:

Press button ☼: The picture gets brighter;
press button **TIP**: The picture gets darker.

2.3 Colour contrast:

Press button ◑: More intensive colours;
press button ●: Less intensive colours.

2.4 It is possible to recover the **optimum value** with button **OK**.

3. Standby

3.1 During TV pauses it is possible to switch the TV set to standby by pressing button ⏻.

3.2 Press one of the numbered buttons **1**...**0** to switch the TV set on again.

Small Video Glossary

The term ...	... and what it means
APF	**A**utomatic **P**rogramme **F**inder, automatically searches the **beginning** of each **own recording**.
Assembly	Assembled recordings with clean joins and without any fuzzy lines between them.
ATTS	**A**uto **T**ape **T**ime **S**elect, measures automatically the tape length of the cassette. The display of the recorder shows the **total playing time** of the cassette in **hours** (eg: **C 4**), as well as the **elapsed playing time** in **hours** and **minutes**.
AV	**A**udio **V**ideo; Audio = audio signal, Video = video signal.
Background	Defines the **background colour** of a line or of a page when creating title (menu) pages or text/graphics boxes.
CL	**CL**ear = delete, clears (deletes) data, terminates entries and functions.
CON GRAPH	Continuous graphics characters, terminates entry of dot graphics characters (SEPAR GRAPH function).
COUNTER	Video tape counting facility, switches over the recorder display between indication of hours/minutes and tape length indication.
CV	**C**amera **V**ideo (= video signal) video signal from/to a video camera or from/to a camera recorder.
DEMO	**DEMO**nstrate, shows a digitally stored freeze-frame (still picture) on the screen of the TV receiver.
DUBBING	Adding sound at a later date, recording a "new" sound on the video tape at a later date.
DOUBLE HEIGHT	When creating title pages or text/graphics boxes, the letters, characters, lines, and figures will be doubled in height.
Edit Search	The recorder automatically searches electronic edit points (marks) on the video tape.
END BOX	Terminates creating text/graphics boxes.
FINE TUNING	Fine tuning when tuning the recorder to TV stations.
FLASH	Makes letters flashing when creating title pages or text/graphics boxes.
Freeze	"Freezes" moving pictures (still picture).
Go-To	Winds the tape to a certain position.
GRAPH	**GRAPH**ics, Switches over between entry of alpha of graphics charracters when creating title pages or text/graphics boxes.

Small Video Glossary

The term ...	... and what it means
HOLD GRAPH	Holds the graphics character and repeats the last entered graphics character.
INSERT	Inserts "new" scenes into existing recordings.
LINE	Separate line for sound recordings.
LP	**L**ong-**P**lay mode, doubles the playing time of a video cassette.
MASTER	Master control for the recording level of several sound sources.
M-C	**M**ulti-**C**hannel, multiple programmes, shows **9 different** programmes on the TV screen.
MEMO	**MEMO**ry, stores single pictures into memory.
M-S	**M**ulti-**S**cene, shows **9 time-shifted** freeze-frames **simultaneously** on the TV screen.
MULTISPEED	Adjustable speed of the video tape on all playback functions.
NORMAL HEIGHT	When creating title pages or text/graphics boxes, alpha and special characters, lines and figures which have been enlarged before will be reduced to normal size.
OTR	**O**ne **T**ouch **R**ecording, quick recording, starts recording.
PAINT	Permits later "painting" of certain pictures.
PIP	**P**icture **in** **P**icture, inserts small pictures into the large picture.
RELEASE GRAPH	When creating title pages or text/graphics boxes, the "repeat function" for the graphics character **stored before** will be released.
RETURN	Carriage return, When creating title pages or text/graphics boxes, the cursor will be moved to the **beginning** of the **next** (new) **line**.
SAT	**SAT**ellite receiver/programmes, receivers that can **directly receive** broadcasts from a satellite.
SEPAR GRAPH	Separate (dotted) graphics, switches over between "**full**" and "**dot**" graphics characters when creating title pages and text/graphics boxes.
Servosynchronisation	Stabilizes and synchronizes the **vertical** and **horizontal** picture position during recording and playback.
SHIFT	(Only for **one** character). Changes the keyboard assignment when creating title pages or text/graphics boxes.
SHIFT LOCK	**Permanently** locks the keyboard assignment when creating title pages or text/graphics boxes.

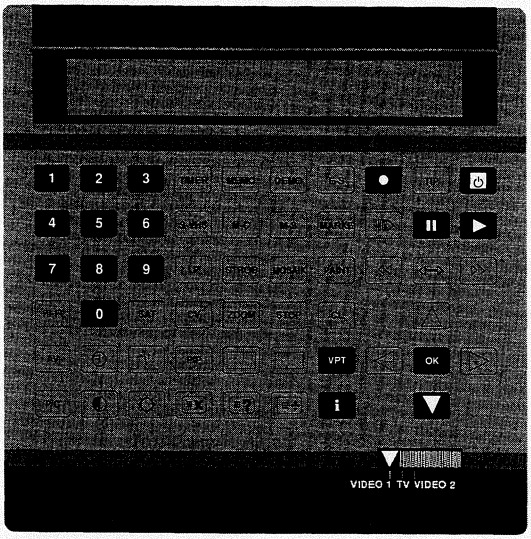
Small Video Glossary

The term ...	... and what it means
SPACE	Inserts a space (blank) between succeeding character.
START BOX	Starts creating of text/graphics boxes.
STEADY	Releases the FLASH function.
S-TYPE	**S**pecial-**Typ**e. Changes the keyboard assignment to special characters (for one character).
STROB	**STROB**oscopic effect, makes the picture movements "jerky" and "broken".
S-VHS	**S**uper-**V**ideo **H**ome **S**ystem, separate recording of the brightness and colour values of a television picture (state of the art in the world).
TIMER	After having programmed a recording, this will be **started** and **stopped** by the **timer**.
TONE SELECT	Permits to select between the **different sound tracks** when **recording** and **playing back**.
TIP	**T**ext **i**n **P**icture, inserts **created** title pages or text/graphics boxes in the TV picture.
TOP	**T**able **o**f **P**ages, term for the latest Teletext-System.
VHS	**V**ideo **H**ome **S**ystem

GRUNDIG

Brief Operating Instructions

The following buttons will be required



Playback

1. Switch on TV set and select AV programme position for video playback.
2. Insert a recorded cassette.
3. Start playback by pressing button ▶.
4. Press button **II** for Pause/Freeze-frame.
   Continue playback with button ▶.
5. Terminate playback with button ⏻.

Recording

1. Switch on TV receiver and select AV programme position for video playback (serves as control monitor).
2. Insert cassette with sufficient playing time not protected against erasure.
3. Select desired TV programme position as **one** or **two figures** with the numbered buttons **1** ... **0**.
4. Start recording with button ●.
5. Enter desired stop time as **four figures** with numbered buttons **1** ... **0** and confirm with button ●.
6. For recording-pause press button **II**.
   Continue recording with button ●.
7. Terminate recording with button ⏻.

Record Programming

Quick programming with button **VPT** on the remote control, the **text programming facility**, and the **Teletext pages** of the broadcasting stations.

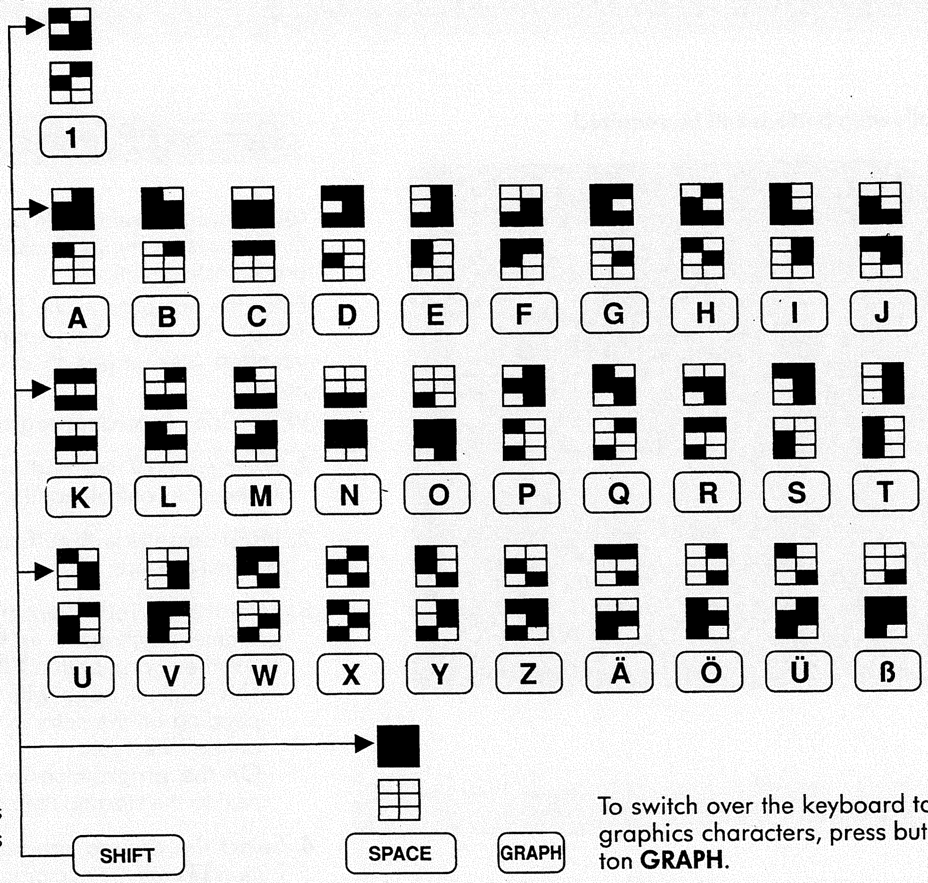
Enter the numbers of the Teletext pages into the "Stations Table". For this the programme positions **1** to **9** are intended (see pages 15 and 16 of the operating instructions).

VPT = **V**ideo recorder **p**rogrammed by **T**eletext.

1. Switch on TV set and select AV programme position (serves as control monitor).
2. Insert cassette with sufficient playing time not protected against erasure.
3. Enter the desired TV programme on one of the programme positions **1** to **9** with the numbered buttons **1** ... **9**, then press button **VPT**.
   - The Teletext page with a programme overview (depending on the entry in the "Stations Table") appears on the TV screen.
   - On the programme overview, a cursor will appear next to the starting time of the first broadcast.
4. Select the desired programme by repeatedly pressing button ▼ until the cursor is positioned next to the starting time of this programme.
5. Confirm the selected programme with button **OK**.
   - The data of the programme are accepted by the first memory position.
   - If a **V** appears below the **VPL** indication, recording of the programme will be controlled by the **VPS** system.
6. For programming the recording press button **OK**.
   - The page **Record Programming** shows all of the 8 TIMER positions – TIMER position 1 is occupied.
   - The indication **Reserve Time** informs you about the remaining playing time of the tape.
7. Terminate record programming by **pressing button i two times**.

Keyboard Assignment of the Remote Control for ...

... Graphics Characters


1
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U
V
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Z
Ä
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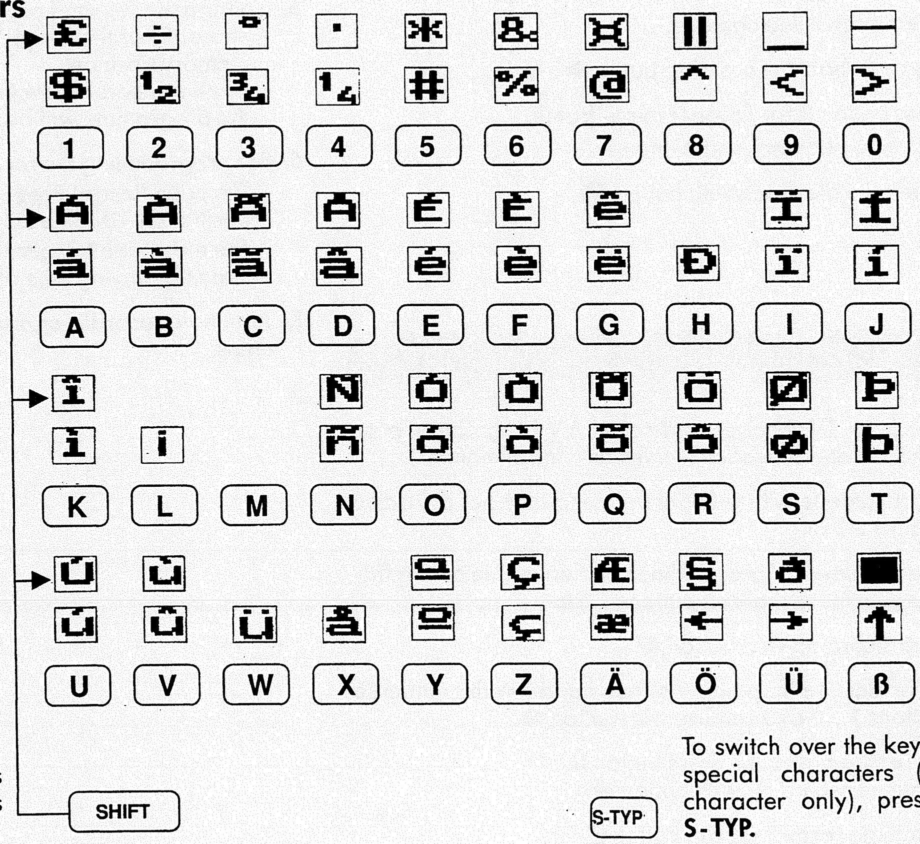
ß
SHIFT
SPACE
GRAPH

For the graphics characters of the upper row, **first** press button **SHIFT**.

To switch over the keyboard to graphics characters, press button **GRAPH**.

... Special Characters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ß
SHIFT
S-TYP

For the special characters of the upper row, **first** press button **SHIFT**.

To switch over the keyboard to special characters (for one character only), press button **S-TYP**.

Important Notes/specification

This video recorder complies with the VDE 0860 safety regulations and consequently also with the international safety specifications IEC 65 or CEE 1.

Under no circumstances should you open the video recorder yourself.

The manufacturer accepts no responsibility for damage which occurs under such circumstances.

Automatic Error Indication

F and any number flashing in the display indicates that there is a fault which can often be eliminated by some simple operations.
First try to press button ≜ and change the cassette. If this is of no avail, contact your dealer and tell him which number is flashing together with **F** in the display.

TV standard:	CCIR, PAL B/G/H, 625 lines CCIR, SECAM B/G, 625 lines *
System:	S-VHS and VHS
Mains voltage:	180...240 V~, ± 10 %, 50 Hz
Weigth:	approx. 8.4 kg
Power consumption	
– on record:	approx. 37 W
– in »Stop« setting:	33 W
– Standby:	12 W (only time displayed)
Operating position:	horizontal
Ambient temperature:	+5 °C to +40 °C
Relative humidity:	up to 80 %
Fast wind time forward/reverse:	with E 240 cassette max. 6 minutes
Audio bandwidth:	a) 20 Hz - 20 kHz to DIN 45500 with HiFi sound recording b) 40 Hz - 10 kHz to DIN 45511 with mono sound recording
Dynamic ratio:	approx. 90 dB (with HiFi sound)
Wow and flutter:	≦ 0.015 % (typ. DIN, with HiFi sound) ≦ 0.005 % (typ. WRMS, with HiFi sound)
Distortion factor:	< 0.3 % (with HiFi sound)
S-VHS sockets: →⊙ and ⊙→	4-pin
Audio sockets **R →⊙ L**	2 Cinch
Audio sockets **R ⊙→ L**	2 Cinch
Headphone socket: (DIN 455800/IEC 13018)	Jack 6.3 mm ø
Microphone sockets: (DIN 45580/IEC 13018)	2 x Jack 6.3 mm ø
Audio socket **L AUDIO R IN**	2 Cinch
Video socket **VIDEO IN**	Cinch
S-VHS socket **S-VHS IN**	4-pin
Remote control socket **R C**	Jack 3.5 mm ø
Universal socket: (no standard)	9-pin
Euro-AV sockets: (DIN/EN 50 049)	21-pin
Aerial input socket: (DIN 45325)	coaxial **B**, input 75 Ω
Aerial output socket: (DIN 45325)	coaxial **S**, output 75 Ω

* On SECAM operation, the picture memory functions »displaying small picture« and »storing small picture and calling up« are not possible.

E. and O.E. Subject to alteration

The complete accessories programme available for your set is shown in the GRUNDIG catalogue »GRUNDIG-REVUE« which can be obtained from your dealer.